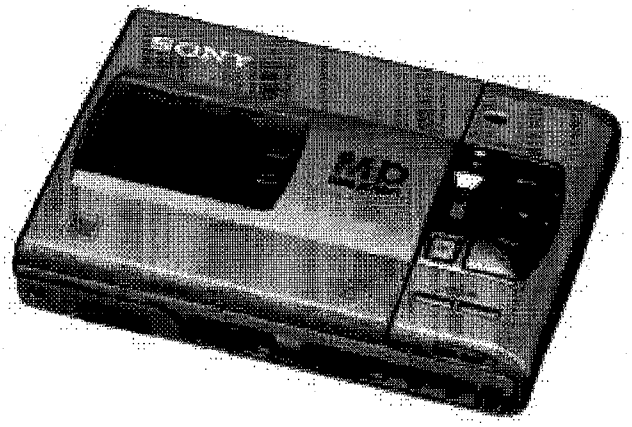
MZ-R50

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model



US and foreign parts licensed Dolby Laboratories Licensing Corporation.

Model Name Using Similar Machanism	NEW
MD Machanism Type	MT-MZR-50-143
Optical Pick-up Type	KMS-280A

SPECIFICATIONS

System
Audio playing system
MiniDisc digital audio system
Laser diode properties
Material: GaAlAs
Wavelength: λ = 780 nm
Emission duration: continuous
Laser output: less than 44.6 μW
(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)
Recording and playback time
Maximum 74 minutes (MDW-74, stereo recording)
Maximum 148 minutes (MDW-74, monaural recording)
Revolutions
400 rpm to 900 rpm (CLV)
Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency
44.1 kHz
Sampling rate converter
Input: 32 kHz / 44.1 kHz / 48 kHz
Coding
Adaptive Transform Acoustic Coding (ATRAC)
Modulation system
EFM (Eight to Fourteen Modulation)
Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB
Wow and Flutter
Below measurable limit
Inputs
Microphone: stereo mini-jack, 0.22-0.78 mV
Line in: stereo mini-jack, 69-194 mV
Optical (Digital) in: optical (digital) mini-jack
Outputs
Headphones: stereo mini-jack, maximum output level 5 mW+ 5 mW, load impedance 16 ohm
Line out: stereo mini-jack, 194 mV, load impedance 10 kilohm

General
Power requirements
Sony AC Power Adaptor (supplied)
connected at the DC IN 6 V jack:
120 V AC, 60 Hz (US, Canadian model)
220-230 V AC, 50/60 Hz (AEP model)
230-240 V AC, 50/60 Hz (UK, Hong Kong model)
240 V AC, 50/60 Hz (Australian model)
100-240 V AC, 50/60 Hz (E, Tourist model)
Lithium ion rechargeable battery LIP-8 (supplied)
Two LR6 (size AA) alkaline batteries (not supplied)

– Continued on page 2 –

PORTABLE MINIDISC RECORDER

MICROFILM

SONY®

Battery operation time
See "Battery life"
Battery life

Batteries	Recording	Playback
LIP-8 lithium ion Rechargeable battery	Approx. 4 hours	Approx. 7 hours
Two LR6 (size AA) Sony alkaline dry batteries		Approx. 12 hours
LIP-8 + Two LR6 (size AA)		Approx. 22 hours

Dimensions
Approx. 109.5 x 19.7 x 77 mm (w/h/d)
(4 3/8 x 25/32 x 3 1/8 in.)
Mass
Approx. 190 g (6.8 oz) the recorder only
Approx. 240 g (8.5 oz) incl, a recordable MD, and LIP-8 lithium ion rechargeable battery
Supplied accessories
AC power adaptor (1)
Headphones with a remote control (1)
LIP-8 lithium ion rechargeable battery (1)
Dry battery case (1)
Ear pads (2)
Carrying case (1)

Design and specifications are subject to change without notice.

For customers in Europe

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This MiniDisc Recorder is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the buttom exterior.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Caution
The use of optical instruments with this product will increase eye hazard.

Information

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

"MD WALKMAN" is a trademark of Sony Corporation.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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Flexible Circuit Board Repairing
- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

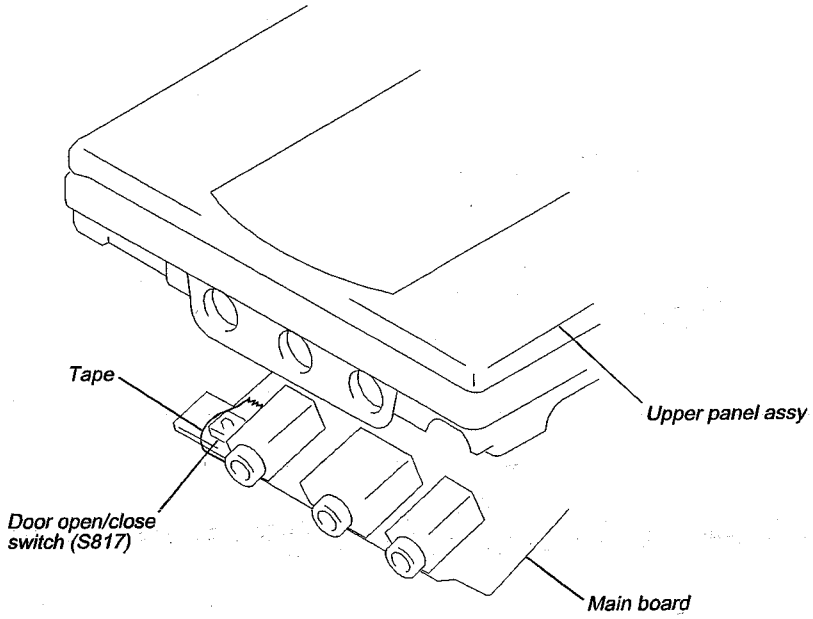
Notes on chip component replacement
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
SERVICING NOTE

When repairing this device with the power on, if you remove the main board or open the upper panel assembly, this device stops working. In this case, you can work without the device stopping by fastening the hook of the Open/Close detection switch (S817) with tape

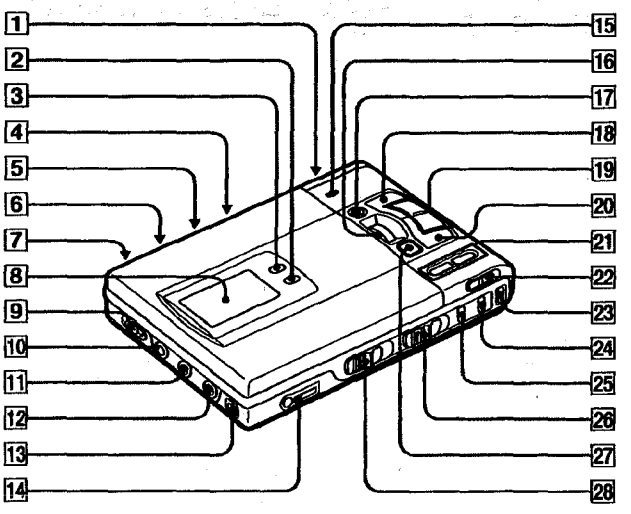


This section is extracted from instruction manual.

Looking at the controls

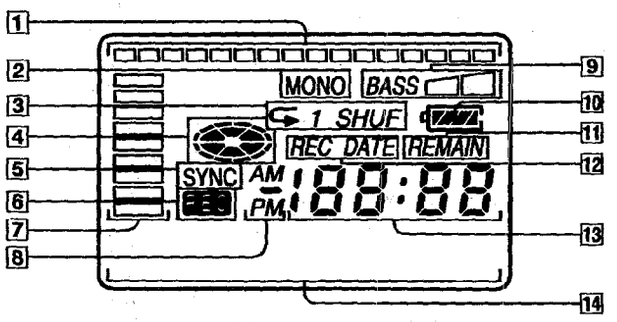
See pages in ( ) for more details.

The recorder

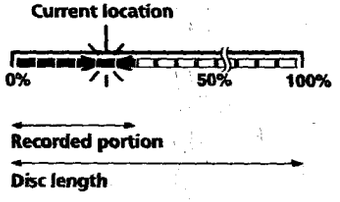


1 Battery compartment (at the bottom) (25)
2 MODE button (17)
3 DISPLAY button (14, 19)
4 CLOCK SET button (at the bottom) (16)
5 MIC SENS switch (at the bottom) (12)
6 AVLS switch (at the bottom) (18)
7 DC IN 6V jack (at the rear) (6)
8 Display window (14, 19)
9 SYNCHRO REC (synchro-recording) switch (11)
10 MIC (PLUG IN POWER) jack (12)
11 LINE IN (OPTICAL) jack (6, 11)
12 LINE OUT jack (20)
13 DIGITAL MEGA BASS button (18)
14 ∩ (headphones)/REMOTE jack (8)
15 REC indicator (14)
16 Vertical jog dial (17, 23)
17 TITLE/ENTER button (23)
18 ► (play) button (7, 9)
19 ⏮/⏭ (search / AMS) button (7, 9)
20 ■ (stop) button (7, 9)
21 VOLUME +/– button (9)
22 HOLD switch (20)
23 ERASE button (21)
24 T MARK button (22)
25 END SEARCH button (7)
26 REC (record) switch (7)
27 ❚❚ (pause) button (7, 9)
28 OPEN button (6)

The display window

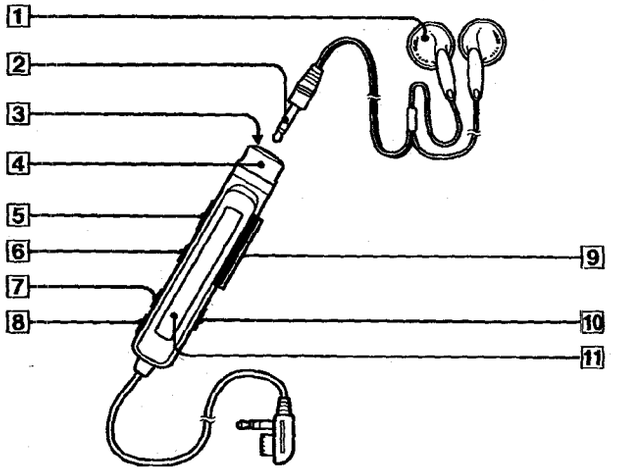


1 Position pointer (14, 19)
Shows the current location on the MD. The point under recording or playing flashes. The recorded portion lights up.



2 MONO (monaural) indication
3 Play mode indication
Shows the play mode of the MD.
4 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
5 SYNC (synchro-recording) indication
6 REC indication (7)
Lights up while recording. When flashing, the recorder is in record standby mode.
7 Level meter
Shows the volume of the MD being played or recorded.
8 AM/PM indication (16)
Lights up along with the time indication in the 12-hour system.
9 Mega bass indication (18)
10 Battery indication (25)
Shows battery condition.
11 REMAIN (remaining time/tracks) indication (14, 19)
Lights up along with the remaining time of the track, the remaining time of the MD, or the remaining number of tracks.
12 REC DATE (recorded/current date) indication
Lights up along with the date and time the MD was recorded. When only "DATE" lights up, the current date and time are displayed.
13 Time display (14, 19)
Shows the recorded time, current time, elapsed time of the track or MD being recorded or played.
14 Character information display (14, 19)
Displays the disc and track names, date, error messages, track numbers, etc.

The headphones with a remote control

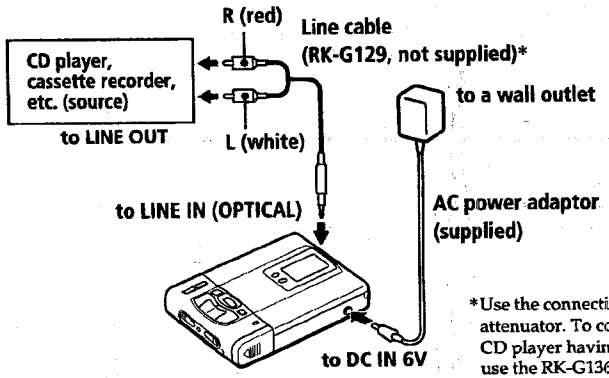


1 Headphones
Can be replaced with optional headphones.
2 Stereo mini plug
3 ■ (stop) button (7,9)
4 Control (9)
To play, turn to ▶▶I during stop.
Turn to ▶▶I during play to search the beginning of the succeeding track; hold in this position to fast-forward.
Turn to I◀◀ during play to search the beginning of the preceeding track; hold in this position to rewind.
5 HOLD switch (20)
Slide to lock the controls of the remote control.
6 ▮▮ (pause) button (7,9)
7 PLAY MODE button (17)
8 DISPLAY button (15, 19)
9 VOL (volume) +/– buttons (9)
10 TRACK MARK button (22)
11 Display window (15, 19)

Recording an MD right away!

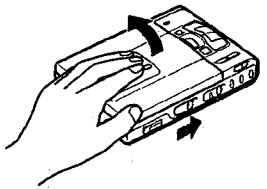
Sound from CD players, cassettecorders, etc., will be sent analogically, but recorded digitally, in stereo. To record from a digital source, see "Recording with digital input" (page 11).

1 Make connections.

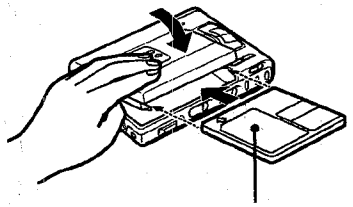


*Use the connecting cords without an attenuator. To connect to a portable CD player having a stereo mini-jack, use the RK-G136 connecting cord (not supplied).

2 Insert a recordable MD.

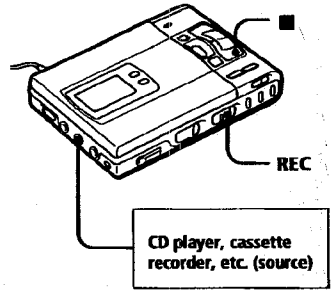


① Slide OPEN and open the lid.



② Insert a recordable MD with the label side facing up, and press the lid down to close.

3 Record an MD.



① Press and slide REC to the right .
"REC" lights up and recording starts.

② Play the CD or tape you want to record.

To stop recording, press ■.
"Data Save" or "Toc Edit" flashes while data of the recording (the track's start and end points, etc.) is being recorded. Do not move or jog the recorder or disconnect the power source while the indication is flashing in the display.

To	Press
Pause	▮▮[1] Press ▮▮ again to resume recording.
Record from the end of the previous recording.	END SEARCH and slide REC.
Record partway through the previous recording.	►, ►►I or I◄◄ to find the start point of recording and press ■ to stop. Then slide REC.
Remove the MD.	■ and open the lid.[2]

[1] A track mark is added at the point where you press ▮▮; thus the remainder of the track will be counted as a new track.
[2] Once you open the lid, the point to start recording will change to the beginning of the first track. Check the point to start recording on the display.

If the recording does not start
- Make sure the recorder is not locked (page 20).
- Make sure the MD is not record-protected (page 28).
- Premastered MDs cannot be recorded over.

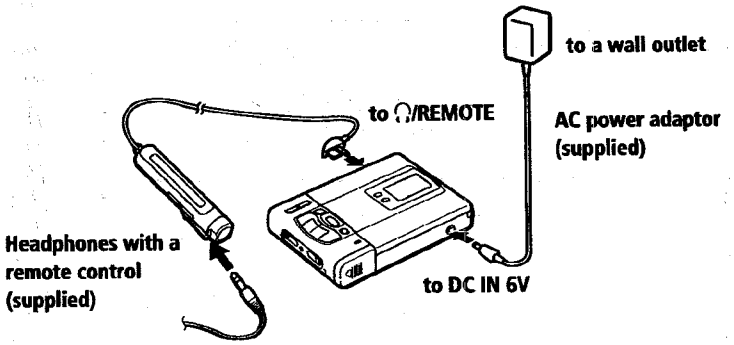
For models supplied with the AC plug adaptor
If the AC power adaptor does not fit the wall outlet, use the AC plug adaptor.

- The level of the recorded sound is adjusted automatically.
- You can monitor the sound being recorded. Connect the supplied headphones with remote control to ∩/REMOTE and adjust the volume by pressing VOLUME +/– (VOL +/– on the remote control). This does not affect the recording level.

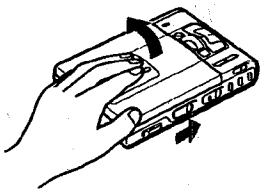
Playing an MD right away!

To use the recorder on a rechargeable battery or dry batteries, see "Power Sources" (pages 25, 26).

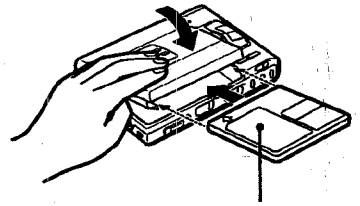
1 Make connections.



2 Insert an MD.

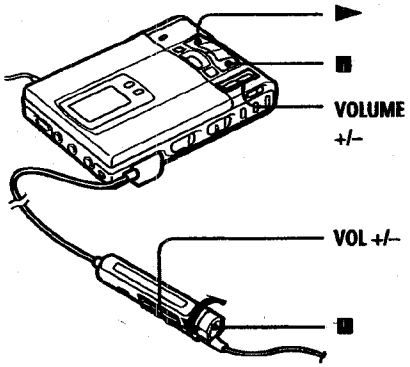


① Slide OPEN and open the lid.



② Insert an MD with the label side facing up, and press the lid down to close.

3 Play an MD.



① **Press ► (Turn the control to ►•►► on the remote control).**
A short beep sounds in the headphones.

② **Press VOLUME (VOL on the remote control) +/– to adjust the volume.**
The volume will be shown in the display.

To stop play, press ■.
A long beep sounds in the headphones.

To	Press (Beeps in the headphones)
Pause	❚❚ (Continuous short beeps) Press ❚❚ again to resume play.
Find the beginning of the current track	⏮ once (Turn the control to ⏮ on the remote control) (Three short beeps)
Find the beginning of the next track	⏭ once (Turn the control to ►•►► on the remote control) (Two short beeps)
Go backwards while playing[1]	keep pressing ⏮ (Turn and hold the control to ⏮ on the remote control)
Go forward while playing[1]	keep pressing ⏭ (Turn and hold the control to ►•►► on the remote control)
Remove the MD	■ and open the lid.[2]

[1] To go backward or forward quickly without listening, press ❚❚ and keep pressing ⏮ or ⏭.
[2] Once you open the lid, the point to start play will change to the beginning of the first track.

If the play does not start
Make sure the recorder is not locked (page 20).

When using optional headphones
Use only headphones with stereo mini plugs. You cannot use headphones with micro plugs.

Playback will switch automatically between stereo and monaural according to the sound source.

Two ways of connecting to a sound source

The input jack of this recorder works as both digital and analog input jacks. Connect the recorder to a CD player or a cassette recorder using either digital input or analog input. To record, see "Recording with digital input" (page 11) to record using digital input, and "Recording an MD right away!" (page 6) to record using analog input.

Difference between digital and analog inputs

Difference \ Input	Digital input	Analog (line) input
Connectable source	Equipment with an optical digital output jack	Equipment with an analog (line) output jack
Usable cord	Digital cable (with an optical or an optical-mini plug)	Line cable (with 2 phono plugs or a stereo-mini plug)
Signal from the source	Digital	Analog Even when a digital source (such as a CD) is connected, the signal sent to the recorder is analog.
Recorded track numbers	Marked (copied) automatically •at the same positions as the source. •when the recorder is paused while recording.	Marked automatically •after more than 2 seconds of blank or low-level segment. •when the recorder is paused while recording. You can erase unnecessary marks after recording ("Erasing a track mark", page 22).
Recorded sound level	Same as the source	Adjusted automatically. Can also be adjusted manually ("Adjusting the recording level manually", page 13).

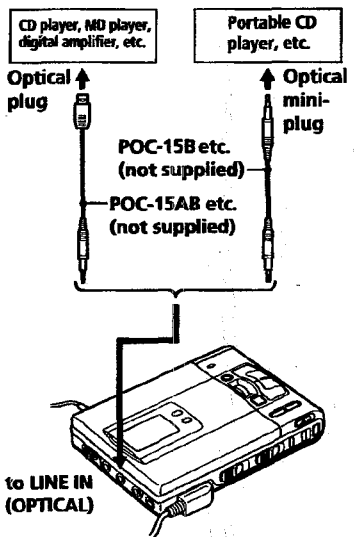
Note

Track marks may be copied incorrectly :

- when you record from some CD players or multi disc players using digital input.
- when the source is in shuffle or program play mode while recording using digital input. In this case, play the source in normal play mode.

Recording with digital input

This unit has a built-in sampling rate converter so that you can record programs from digital equipment using other sampling rates, such as a BS tuner or a DAT deck.



1 Insert a recordable MD and start recording.
For recording operations, see "Recording an MD right away !" (page 6). To record from a portable CD player, set the CD player to pause and then start recording.

LINE IN (OPTICAL) jack is for both digital and analog input

The recorder automatically recognizes the type of line cable and switches to digital or analog input.

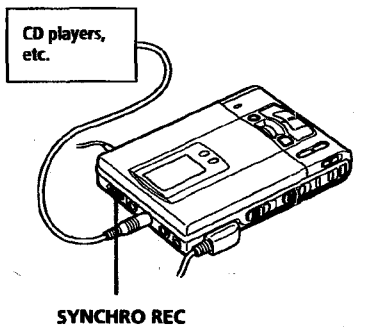
Notes

- You can make a digital recording only from an optical type output.
- When recording from a portable CD player, play it on AC power and disable the anti-skip function (such as ESP*).

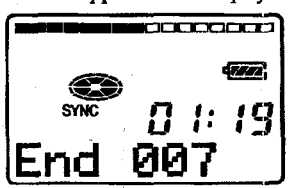
* Electronic Shock Protection

To start/stop recording in sync with the source player (Synchro-recording)

You can easily make digital recordings of a digital source on an MD.
Before synchro-recording, make connections to the digital source with a digital cable, and insert a recordable MD.



1 Slide SYNCHRO REC to ON.
"SYNC" appears in the display.



2 Press and slide REC to the right.
The recorder stands by for recording.

3 Play the source sound.
The recorder starts recording when it receives the playing sound.

To stop recording, press ■.

continued

- 9 -

- You cannot pause manually during synchro-recording.
- When there is no sound from the player for more than 3 seconds during synchro-recording, the recorder goes into the standby mode automatically. When the sound comes from the player again, the recorder resumes synchro-recording. If the recorder is kept in the standby mode for 5 minutes or longer, the recorder stops automatically.

Notes

- Do not switch SYNCHRO REC after step 2. Recording may not be done properly.
- When recording in monaural, follow steps 1 and 2 of "Recording in monaural for double the normal recording time" (page 13) before synchro-recording .

Recording from a microphone

Connect a stereo microphone (ECM-717, ECM-MS907, ECM-MS957, etc.; not supplied) to the MIC (PLUG IN POWER) jack.

1 Select the sensitivity with MIC SENS (at the bottom of the recorder) . Usually, set it to HIGH. When recording loud sounds such as a live concert, set it to LOW.

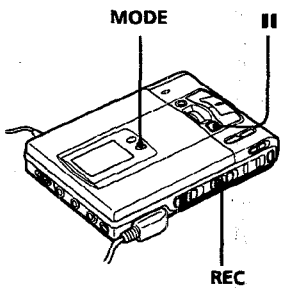
2 Insert a recordable MD and start recording.
Press and slide REC to the right.
"REC" lights up and recording starts.
For other operations, see "Recording an MD right away! " (page 6).

Note

To record from a microphone, you must first disconnect any digital source. If connected, the recorder will not switch to microphone input.

Recording in monaural for double the normal recording time

For longer recordings, choose to record in monaural. The recording time becomes double the normal.



1 While pressing II, press and slide REC to the right.
The recorder stands by for recording.

2 Press MODE.
"Mono REC" appears in the display, and the recorder switches to monaural recording.
Press MODE again to record in stereo.

3 Press II again to start recording.

4 Play the sound source.

To stop recording, press ■.

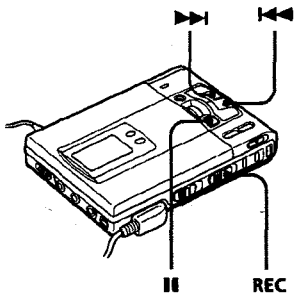
The recorder switches back to stereo recording when you record the next time.

Notes

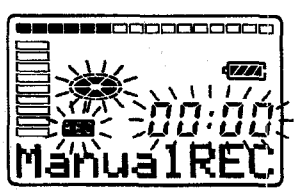
- If you record a stereo source in monaural, the sounds from left and right will be mixed.
- You cannot record in monaural if SYNCHRO REC is slid to ON.
- The MDs recorded in monaural can be played back only with an MD player/ recorder that has the monaural playing function.

Adjusting the recording level manually (Manual recording)

When you record with an analog input, the sound level is adjusted automatically. If necessary, you can set the level manually.



1 While holding down II, press and hold REC to the right for more than 2 seconds.
"ManualREC" appears and the recorder stands by for recording.
To return to the automatic control, while the recorder is in standby mode, press and hold REC to the right again for more than 2 seconds.

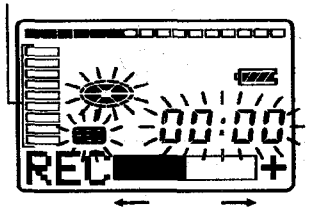


2 Play the source.

continued

3 While observing the level meter in the display, adjust the recording level by pressing ▶▶| (+) or |◀◀ (–).
Set the level so that it hits the seventh indicator from the bottom at maximum input level.

Level meter



Volume decreases ← → increases

Note

Adjust the recording level while the recorder is in standby mode. You cannot adjust it while recording.

4 Press ❚❚ again to start recording.

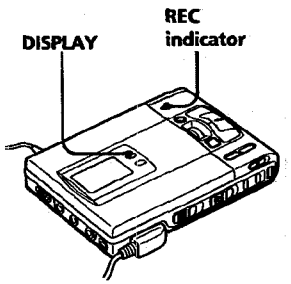
To stop recording, press ■.

The recording level control is switched back to automatic control.

When you record with microphone input, select the sensitivity with MIC SENS (page 12).

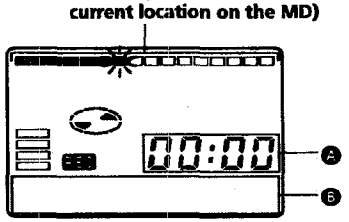
Checking the remaining time or the recording position

On the recorder



1 Press DISPLAY while recording or in stop mode. Each time you press the button, the display changes as follows.

Position pointer (shows the current location on the MD)



While recording

Ⓐ	Ⓑ
Elapsed time	Track number
Remaining time for recording	Track number
Current time[1]	Current date[1]

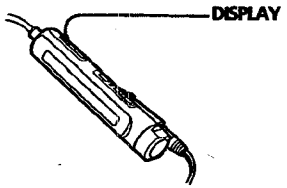
[1] Appears only when the clock is set.

In stop mode

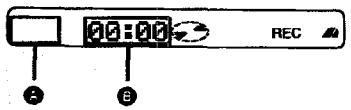
Ⓐ	Ⓑ
Elapsed time	Track number
Remaining time for recording	Track name[1]
Remaining time after the current location	Disc name[1]
Current time[2]	Current date[2]

[1] Appears only if the track has been labeled.
[2] Appears only when the clock is set.

On the remote control



1 Press DISPLAY while recording or in stop mode. Each time you press the button, the display changes as follows.



While recording

Ⓐ	Ⓑ
Track number	Elapsed time
Track number	Remaining time for recording
—	Current time[1]

[1] Appears only when the clock is set.

In stop mode

Ⓐ	Ⓑ
Track number	Elapsed time
Track number	Track name[1]
Number of tracks in the disc	Disc name[1]
—	Current time[2]

[1] Appears only if the track has been labeled.
[2] Appears only when the clock is set.

To know the recording condition

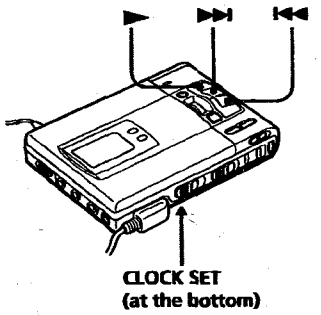
The REC indicator lights up or flashes according to the recording condition.

Recording condition	REC indicator
While recording	lights up flashes according to the loudness of the source while recording with a microphone (voice mirror)
Recording standby	flashes
Less than 3 minutes' recording time available	flashes slowly
A track mark has been added	goes off momentarily

If you want to check the playing position or track name while playing, see page 19.

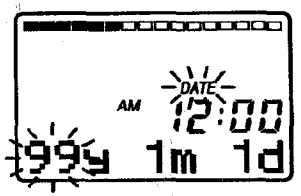
Setting the clock to stamp the recorded time

To stamp the date and time on the MD when you record, you first need to set the clock.



1 Connect the power source.
Use the supplied AC power adaptor.

2 Press CLOCK SET at the bottom of the recorder.
Use a pointed object.
The digits of the year flash.



3 Change the current year by pressing ⏮ or ⏭.
To change the digits rapidly, keep pressing ⏮ or ⏭.

4 Press ▶ to enter the year.
The digit of the month flashes.

5 Repeat steps 3 and 4 to enter the current month, date, hour, and minute.
When you press ▶ to enter the minute, the clock starts operating.

If you make a mistake while setting the clock

Press ■, and set the clock again from step 2. You can skip a step by pressing ▶.

To display the current time

When the recorder is not operating or while recording, press DISPLAY repeatedly until the current time appears in the display.

To display the time in the 24-hour system

While setting the clock, press DISPLAY.
To display the time in the 12-hour system, press DISPLAY again.

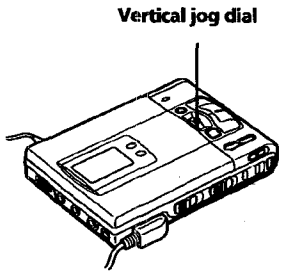
Charging the built-in battery for the clock

When you use the recorder for the first time or after a long period of disuse, charge the built-in battery. After setting the clock, leave the recorder connected to the AC power for about 2 hours to charge the built-in battery. Once charged, the built-in battery should last about a month without connecting to any of the power sources. The recorder will automatically charge the built-in battery while connected to AC power, dry batteries or a rechargeable battery.

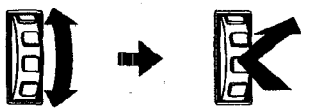
▶*Various ways of playback*

Selecting the track number or track name directly

You can select the desired track directly by using the vertical jog dial.



1 Rotate the jog dial to select a track, and press it to play the selected track.



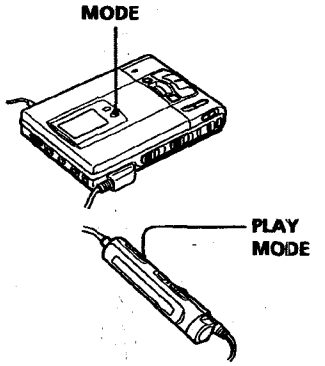
When you rotate the jog dial, the track name* appears in the display. To play the selected track, press the jog dial.

* If the track has not been labeled, only the track number appears in the display.

If you select a track in shuffle play mode, shuffle play starts from the selected track.

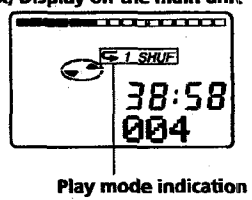
Playing tracks repeatedly

You can play tracks repeatedly in three ways — all repeat, single repeat, and shuffle repeat.



1 Press MODE (PLAY MODE on the remote control) while the recorder is playing an MD.
Each time you press the button, the play mode indication changes as follows.

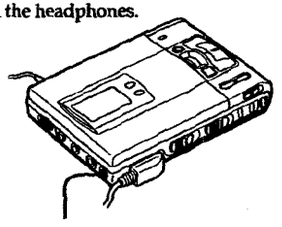
Ex; Display on the main unit



Indication	Play mode
none (normal play)	All the tracks are played once.
"↻" (all repeat)	All the tracks are played repeatedly.
"↻ 1" (single repeat)	A single track is played repeatedly.
"↻ SHUF" (shuffle repeat)	All the tracks are played repeatedly in random order.

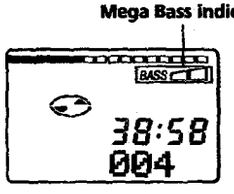
Emphasizing bass (DIGITAL MEGA BASS)

Mega Bass function intensifies low frequency sound for richer quality audio reproduction. It affects only the sound from the headphones.



DIGITAL MEGA BASS

1 Press DIGITAL MEGA BASS.
Each time you press DIGITAL MEGA BASS, the Mega Bass indication changes as follows.



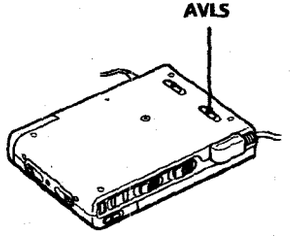
Indication	Play mode
none	Normal play
"BASS ▭"	Mega Bass (moderate effect)
"BASS ▭▭"	Mega Bass (strong effect)

Notes

- If the sound becomes distorted when emphasizing bass, turn down the volume.
- Mega Bass function does not affect the sound being recorded.
- Mega Bass does not function when a line cable is connected to the LINE OUT jack on the recorder.

Protecting your hearing (AVLS)

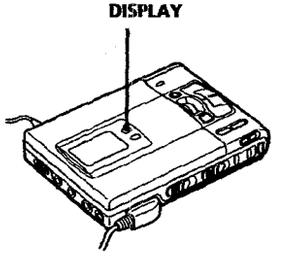
The AVLS (Automatic Volume Limiter System) function keeps down the maximum volume to protect your ears.



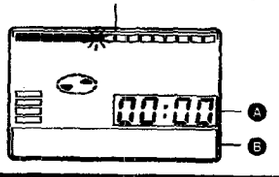
1 Set AVLS at the bottom of the recorder to LIMIT.
When you try to turn the volume too high, "AVLS" appears in the display. The volume is kept to a moderate level.

Checking the remaining time or the playing position

On the recorder



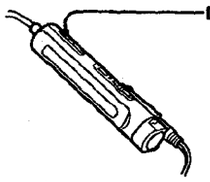
1 Press DISPLAY while playing.
Each time you press DISPLAY, the display changes as follows.



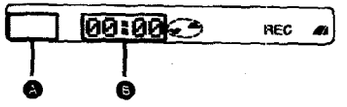
A	B
Elapsed time	Track number
Remaining time of the current track	Track name[1]
Remaining time after the current location	Disc name[1]
Recorded time[2]	Recorded date[2]

[1] Appears only if the track has been labeled.
[2] Appears only when the clock is set.

On the remote control



1 Press DISPLAY while playing.
Each time you press DISPLAY, the display changes as follows.



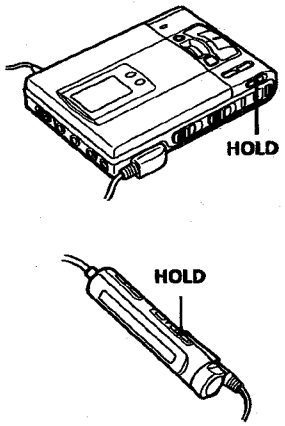
A	B
Track number	Elapsed time
Track number	Track name[1]
The number of tracks in the disc	Disc name[1]
—	Recorded time[2]

[1] Appears only if the track has been labeled.
[2] Appears only when the clock is set.

If you want to check the remaining time or the recording position while recording or in stop mode, see page 14.

Locking the controls (HOLD)

To prevent the buttons from being accidentally operated when you carry the recorder, use this function.



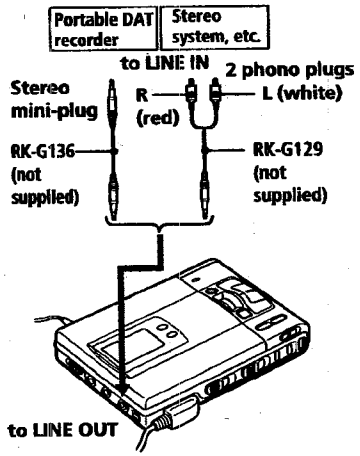
1 Slide HOLD in the direction of the →.

On the recorder, slide HOLD to lock the controls of the recorder. On the remote control, slide HOLD to lock the controls of the remote control.

Slide HOLD in the opposite direction of the arrow to unlock the controls.

Connecting to a stereo system

Connect the LINE OUT jack of the recorder to the LINE IN jacks of an amplifier or a tape player with a line cable (RK-G129 or RK-G136, not supplied). The output is analog. The recorder plays the MD digitally and sends analog signals to the connected equipment.



Note

The Mega Bass does not function or will be cancelled when the LINE OUT jack is connected with a line cable.

▶*Editing recorded tracks*

You can edit your recordings by adding/erasing track marks or labeling tracks and MDs. Premastered MDs cannot be edited.

Notes on editing

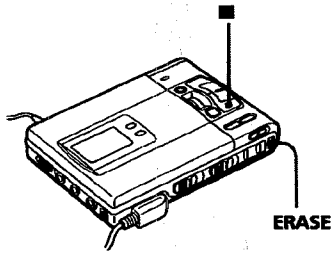
- Do not move or jog the recorder while "Toc Edit"* is flashing in the display.
- You cannot edit tracks on an MD that is record-protected. Before editing tracks, close the tab on the side of the MD.

*TOC = Table of Contents

Erasing tracks

To erase a track

Note that once a recording has been erased, you cannot retrieve it. Make sure of the track you are erasing.



1 Press ERASE while playing the track you want to erase.
"Erase OK?" and "Push Erase" appear in the display alternately, and the recorder plays the selected track repeatedly. To cancel erasing, press ■.

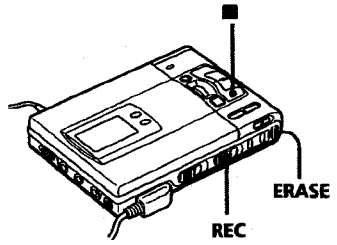
2 Check the track number in the display and press ERASE again.
The track is erased from the MD and the remaining tracks are renumbered.

To erase a part of a track

Add track marks at the beginning and the end of the part you want to erase, then erase the part.

To erase the whole disc

You can quickly erase all the tracks and data of the MD at the same time.
Note that once a recording has been erased, you cannot retrieve it. Be sure to check the contents of the disc you want to erase.

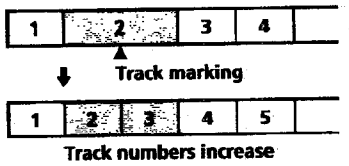


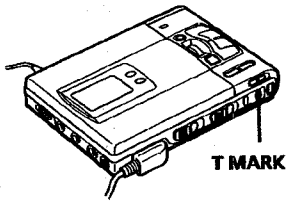
1 In stop mode, keep pressing ERASE and press and slide REC to the right.
"All Erase?" and "Push Erase" appear in the display alternately. To cancel erasing, press ■.

2 Press ERASE again.
"Toc Edit" flashes in the display. When erasing finishes, "BLANK DISC" appears.

Adding a track mark

You can add track marks so that the part after the new track mark is counted as a new track.
The track numbers will increase as follows.





1 While playing or pausing an MD, press T MARK on the recorder at the point you want to mark.
"MARK ON" appears in the display, and a track mark is added. The track number will increase by one.

To add track marks while recording

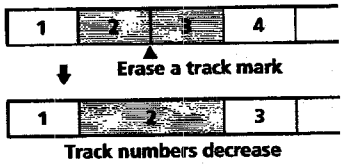
Press T MARK on the recorder or TRACK MARK on the remote control.

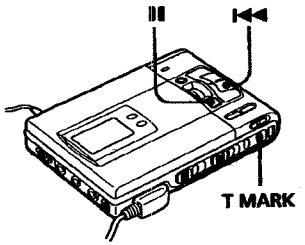
Note

TRACK MARK on the remote control does not function during playback.

Erasing a track mark

When you record with analog (line) input, unnecessary track marks may be recorded where recording level is low. You can erase a track mark to combine the tracks before and after the track mark. The track numbers will change as follows.





1 While playing the track with the track mark you want to erase, press ⏸ to pause.

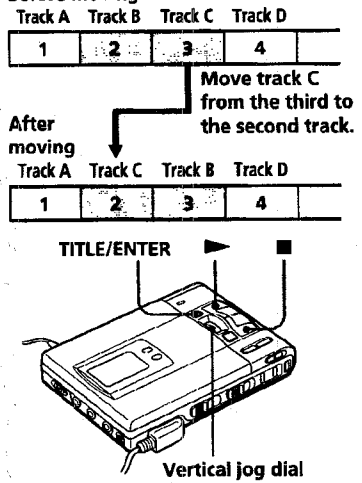
2 Find the track mark by pressing ⏮ slightly.
For example, to erase the third track mark, find the beginning of the third track. "00:00" appears in the display.

3 Press T MARK to erase the mark.
"MARK OFF" appears in the display. The track mark is erased and the two tracks are combined.

When you erase a track mark, the date, time, and name assigned to the mark are also erased.

Moving recorded tracks

You can change the order of the recorded tracks.



1 While playing the track you want to move, keep pressing ► and press TITLE/ENTER.
The recorder plays the selected track repeatedly.
For the example above, "MV003→003" appears in the display.

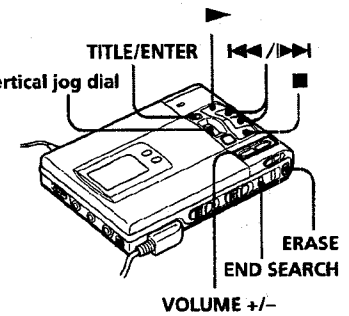
2 Rotate the vertical jog dial to select the new track position.
For the example above, rotate the jog dial until "MV003→002" appears in the display.
To cancel moving, press ■.

3 Press TITLE/ENTER again.
Moving is completed and the recorder plays the moved track.

You can also move the track by pressing the jog dial in step 3.

Labeling recordings

You can label the MDs and tracks you recorded with letters, numbers, and marks. Each label can be made up of up to 200 characters, and each MD can hold up to 1700 characters.



1 To label a track , play the track you want to label.
To label an MD, insert the recordable MD you want to label. If an MD is already inserted, press ■ to stop.

2 Press TITLE/ENTER.
If you have selected a track in step 1 above, the recorder will play that track repeatedly.
A cursor flashes in the display.

3 Use the vertical jog dial to select and enter a character.

Rotate the jog dial to select a character, and press the jog dial to enter the selected character. The cursor shifts rightward and stands by for the input of the next character.

continued

Press	To
►	Switch between capital letters, small letters, and marks/numbers.
⏮/⏭	Move the cursor to the left or right.
END SEARCH	Insert a space.
ERASE	Delete a character.
■	Cancel labeling.

4 Repeat step 3 until you have entered all the characters for the label.

5 Press TITLE/ENTER.
Labeling is completed.

To cancel labeling, press ■.

Available characters

- Capital and small letters of the English alphabet
- Numbers 0 to 9
- ! " # $ % & ( ) * + − . ; < = > ? @ _ ` ' , / : _ (space)

To relabel recordings

Follow steps 1 and 2 to display the label of the track or MD. Enter a new character over the one you want to change, then press TITLE/ENTER.

Notes

- You cannot relabel premastered MDs or label MDs that have not been recorded.
- The recorder is able to display, but cannot label using, Japanese "Katakana" characters.

▶Power sources

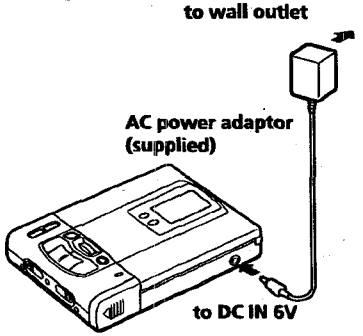
You can use the recorder on house current or as follows.
In the recorder ...
– a lithium ion rechargeable battery (supplied)
With supplied battery case ...
– dry batteries (not supplied)

It is preferable to use the recorder on house current when recording for a long time.

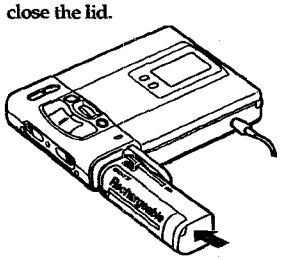
Using a lithium ion rechargeable battery

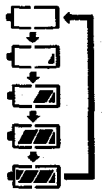
Before using the supplied LIP-8 lithium ion rechargeable battery for the first time, charge it in the recorder.

1 Connect the supplied AC power adaptor.



2 Insert the LIP-8 into the recorder and close the lid.





Battery indication appears in the display and charging starts.
When charging is completed, battery indication disappears.

Charging time

80%	Approx. 2 hours
100%	Approx. 3 hours

(To charge a completely discharged battery)

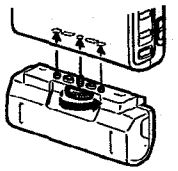
You can use the recorder while charging.

Notes

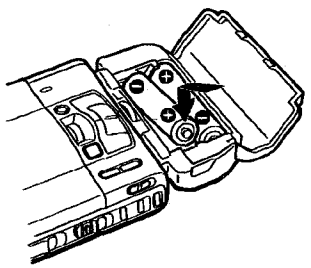
- Be sure to use the supplied AC power adaptor.
- Charging time may vary depending on the battery condition.

Using dry batteries

1 Attach the supplied battery case.



2 Insert two LR6 (size AA) dry batteries (not supplied).



Battery life[1]

Batteries	Recording[2]	Playback
LIP-8 lithium ion rechargeable battery	Approx. 4 hours	Approx. 7 hours
Two LR6 (size AA) Sony alkaline dry batteries	—[3]	Approx. 12 hours
LIP-8 + Two LR6 (size AA)	—[3]	Approx. 22 hours

[1] The battery life may be shorter due to operating conditions and the temperature of the location.
[2] When you record, use a fully charged rechargeable battery.
[3] Recording time may differ according to the alkaline batteries.

When to replace the batteries

When the dry batteries or rechargeable battery are weak, flashing ▭ or "LOW BATT" appear in the display. Replace the dry batteries or charge the rechargeable battery.

Precautions

On safety

Do not put any foreign objects in the DC IN 6 V jack.

On power sources

- Use house current, lithium ion rechargeable battery, two LR6 (size AA) batteries, or car battery.
- For use in your house: Use the AC power adaptor supplied with this recorder. Do not use any other AC power adaptor since it may cause the recorder to malfunction.

Polarity of the plug

- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use this recorder for a long time, be sure to disconnect the power supply (AC power adaptor, dry batteries, rechargeable battery, or car battery cord). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.
- For use in the car: Use the CPA-8 or CPA-9 car connecting pack and the DCC-E260 car battery cord (not supplied).

On heat build-up

Heat may build up in the recorder if it is used for an extended period of time. In this case, leave the recorder turned off until it cools down.

On installation

- Never use the recorder where it will be subjected to extremes of light, temperature, moisture or vibration.
- Never wrap the recorder in anything when it is being used with the AC power adaptor. Heat build-up in the recorder may cause malfunction or damage.

On the headphones

Road safety

Do not use headphones while driving, cycling, or operating any motorized vehicle. It may create a traffic hazard and is illegal in many areas. It can also be potentially dangerous to play your recorder at high volume while walking, especially at pedestrian crossings. You should exercise extreme caution or discontinue use in potentially hazardous situations.

Preventing hearing damage

Avoid using headphones at high volume. Hearing experts advise against continuous, loud and extended play. If you experience a ringing in your ears, reduce the volume or discontinue use.

Caring for others

Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate of the people around you.

On the MiniDisc cartridge

- Do not break open the shutter.
- Do not place the cartridge where it will be subject to light, extreme temperatures, moisture or dust.

On cleaning

- Clean the recorder casing with a soft cloth slightly moistened with water or a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene as it may mar the finish of the casing.
- Wipe the disc cartridge with a dry cloth to remove dirt.
- Dust on the lens may prevent the unit from operating properly. Be sure to close the disc compartment lid after inserting or ejecting an MD.

Notes on batteries

Incorrect battery usage may lead to leakage of battery fluid or bursting batteries. To prevent such accidents, observe the following precautions:

- Install the + and – poles of the batteries correctly.
- Do not install new and used batteries or different kinds of batteries together.
- Do not try to recharge dry batteries.
- When the recorder is not to be used for a long time, be sure to remove the batteries.
- If a battery leak should develop, carefully and thoroughly wipe away battery fluid from the battery compartment before inserting new ones.

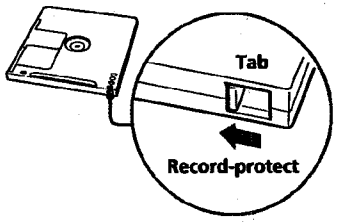
Note on mechanical noise

The recorder gives off mechanical noise while operating, which is caused by the power-saving system of the recorder and it is not a problem.

To protect a recorded MD

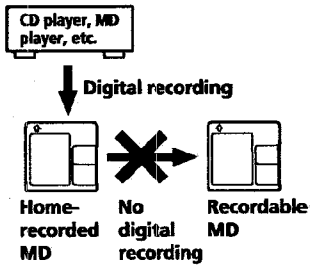
To record-protect an MD, slide open the tab at the side of the MD. In this position, the MD cannot be recorded. To record again, slide the tab back so the tab is visible.

Back of the MD



Note on digital recording

This recorder uses the Serial Copy Management System, which allows only first-generation digital copies to be made from premastered software. You can only make copies from a home-recorded MD by using the analog (line out) connections.



If you have any questions or problems concerning your recorder, please consult your nearest Sony dealer.

Troubleshooting

Should any problem persist after you have made these checks, consult your nearest Sony dealer.

Symptom	Cause/Solution
The recorder does not work or works poorly.	• Audio sources may not be securely connected. ➡ Disconnect the audio sources once and connect them again (pages 6,11). • Moisture has condensed inside the recorder. ➡ Take the MD out and leave the recorder in a warm place for several hours until the moisture evaporates. • The rechargeable battery or dry batteries are weak (▭ or "LOW BATT" flashes). ➡ Charge the rechargeable battery or replace the dry batteries (pages 25, 26). • The rechargeable battery or dry batteries have been installed incorrectly. ➡ Install the batteries correctly (page 26). • You pressed a button while the disc indication was rotating quickly. ➡ Wait until the indication rotates slowly. • The recording volume is too low. • When recording digitally from a portable CD player, you did not use AC power or did not disable the anti-skip function such as ESP (page 11). • The analog recording was made using a connecting cord with an attenuator. ➡ Use a connecting cord without an attenuator (page 6). • The AC adaptor was unplugged during recording or a power outage occurred. • While operating, the recorder received a mechanical shock, too much static, abnormal power voltage caused by lightning, etc. ➡ Restart the operation as follows. **1** Disconnect all the power sources. **2** Leave the recorder for about 30 seconds. **3** Connect the power source.
No sound comes through the headphones.	• The headphones plug is not firmly connected. ➡ Plug in the plug of the headphones firmly to the remote control. Plug in the plug of the remote control firmly to ∩/REMOTE. • Volume is too low. ➡ Adjust the volume by pressing VOLUME +/– (VOL +/– on the remote controller). • AVLS is on. ➡ Slide AVLS to NORMAL (page 18).

Symptom	Cause/Solution
An MD is not played from the first track.	• Disc playing stopped before it came to the last track. ➔ Press ⏮ repeatedly or open and close the lid once to go back to the beginning of the disc, and restart playing after checking the track number in the display.
Playback sound skips.	• The recorder is placed where it receives continuous vibration. ➔ Put the recorder on a stable place. • A very short track may cause sound to skip.
Sound has a lot of static.	• Strong magnetism from a television or such device is interfering with operation. ➔ Move the recorder away from the source of strong magnetism.
Cannot find the track marks.	• You pressed ⏸ after pressing ⏮ or ⏭. ➔ Press ⏸ before pressing ⏮ or ⏭.
Charging the rechargeable battery does not start.	• The rechargeable battery has been inserted incorrectly or the AC power adaptor has been connected incorrectly. ➔ Insert the battery correctly or connect the AC power adaptor correctly.
The clock loses time or the display flashes. The recording date was not stamped onto the disc.	• The built-in battery for the clock is weak. ➔ Connect the AC power adaptor to DC IN 6 V on the recorder and the wall outlet to charge the built-in battery. After charging, set the clock again (page 16). Note that the clock normally loses about 2 minutes per month.

System limitations

The recording system in your MiniDisc recorder is radically different from those used in cassette and DAT decks and is characterized by the limitations described below. Note, however, that these limitations are due to the inherent nature of the MD recording system itself and not to mechanical causes.

Symptom	Cause
"TR FULL" appears even before the disc has reached the maximum recording time (60 or 74 minutes).	When 254 tracks have been recorded on the disc, "TR FULL" appears regardless of the total recorded time. More than 254 tracks cannot be recorded on the disc. To continue recording, erase unnecessary tracks.
"TR FULL" appears even before the disc has reached the maximum track number or recording time.	Repeated recording and erasing may cause fragmentation and scattering of data. Although those scattered data can be read, each fragment is counted as a track. In this case, the number of tracks may reach 254 and further recording is not possible. To continue recording, erase unnecessary tracks.
Track marks cannot be erased.	When the data of a track is fragmented, the track mark of a fragment under 12 seconds long cannot be erased. You cannot combine a track recorded in stereo and a track recorded in monaural; nor can you combine a track recorded with digital connection and a track recorded with analog connection.
The remaining recording time does not increase even after erasing numerous short tracks.	Tracks of under 12 seconds in length are not counted and so erasing them may not lead to an increase in the recording time.
The total recorded time and the remaining time on the disc may not total the maximum recording time (60 or 74 minutes).	Recording is done in minimum units of 2 seconds each, no matter how short the material. Even if the last unit of recording is less than 2 seconds, it is counted as a unit of 2 seconds. Then 2 seconds' space is put before recording starts again to prevent the last unit of the previous track from being erased. The contents recorded may thus be shorter than the maximum recording capacity.
The edited tracks may exhibit sound dropout during search operations.	The fragmentation of data may cause sound dropout while searching because the tracks are played in higher speed than normal playback.

Messages

If the following error messages flash in the display window, check the chart below.

Error message	Meaning/Remedy
BLANK DISC	• An MD with no recording on it is inserted. ➡ Insert a recorded MD.
DISC ERR	• The recorder cannot read the disc (it's scratched or dirty). ➡ Reinsert or replace the disc.
DISC FULL	• There is no more space to record on the disc (less than 12 seconds available). ➡ Replace the disc.
Data Save	• The MD player is recording information (sounds) from the memory to the disk. ➡ Wait until this process is completed. Do not expose the player to any physical shock, nor disrupt power supply.
Toc Edit	• The MD player is recording information (track start and end position) from the memory to the disk. ➡ Wait until this process is completed. Do not expose the player to physical shock, nor disrupt power supply.
BUSY	• You tried to operate the recorder while it was accessing the recorded data. ➡ Wait until the message goes out (in rare cases, it may take 2–3 minutes).
NAME FULL	• You tried to enter more than 200 characters for a track or disc name or the total characters entered in an MD is more than 1700. ➡ Enter the characters within the limit.
Hi DC in	• Voltage of the power supply is too high (The supplied AC power adaptor or the recommended car battery cord is not used). ➡ Use the supplied AC power adaptor or the recommended car battery cord.
HOLD	• The recorder is locked. ➡ Slide HOLD against the arrow to unlock the recorder (page 20).
LOW BATT	• Batteries are weak. ➡ Charge the rechargeable battery or replace the dry batteries (pages 25, 26).
MEM OVER	• You tried to record when there is no indication in the display, with the recorder placed where it receives continuous vibration. ➡ Put the recorder on a stable place, and start recording again.

Error message	Meaning/Remedy
NO COPY	• You tried to make a copy from a disc that is protected by the Serial Copy Management System. You cannot make copies from a digitally connected source which was itself recorded using digital connection. ➡ Use analog connection instead (page 6).
NO DISC	• You tried to play or record with no disc in the recorder. ➡ Insert an MD.
NO SIGNAL	• The recorder could not detect digital input signals. ➡ Make sure that the source is connected firmly (page 11). • If the error message appears while recording, press ■ to stop recording.
P/B ONLY	• You tried to record or edit on a premastered MD (P/B means playback.) ➡ Insert a recordable MD.
PROTECTED	• You tried to record or edit on a MD with the tab in the record-protect position. ➡ Slide the tab back (page 28).
SORRY	• You tried to erase a track mark while playing the MD or at the beginning of the first track. • You tried to erase a track mark to combine tracks the recorder cannot combine (caused by system limitation).
TEMP OVER	• Heat has built up in the recorder. ➡ Let the recorder cool down.
TR FULL	• There is no more space for new data when you are editing the MD. ➡ Erase unnecessary tracks (page 21).
TrPROTECT	• You tried to record or edit on a track that is protected from erasing. ➡ Record or edit on other tracks.

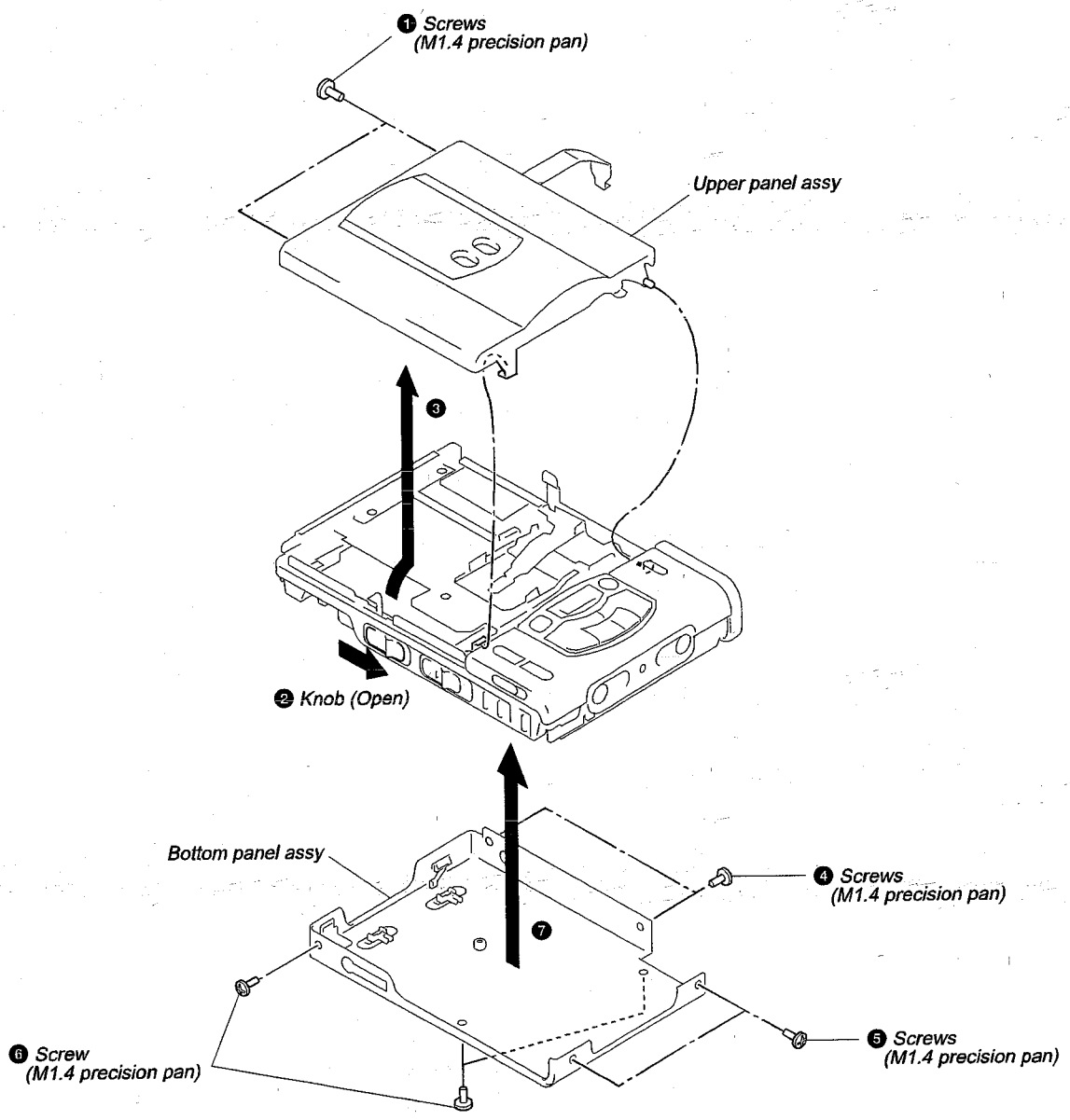
SECTION 3
DISASSEMBLY

● The equipment can be removed using the following procedure.

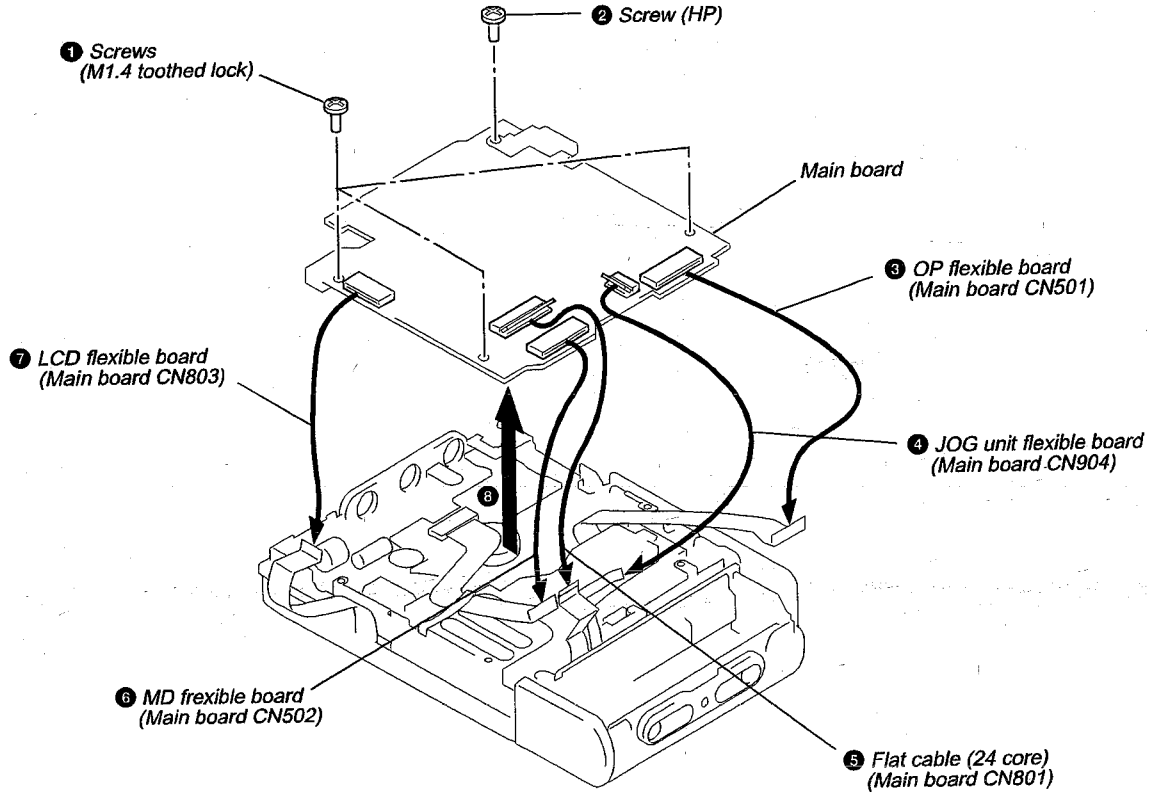
Set ⟶ Upper panel assy, Bottom panel assy ⟶ Main board ⟶ Mechanism deck ⟶ Optical pick-up assy, REC board
Mechanism deck ⟶ CLV board
Main board ⟶ Battery case assy ⟶ Power board, Switch board
Battery case assy ⟶ SWITCH UNIT (with JOG DIAL)

Note : Follow the disassembly procedure in the numerical order given.

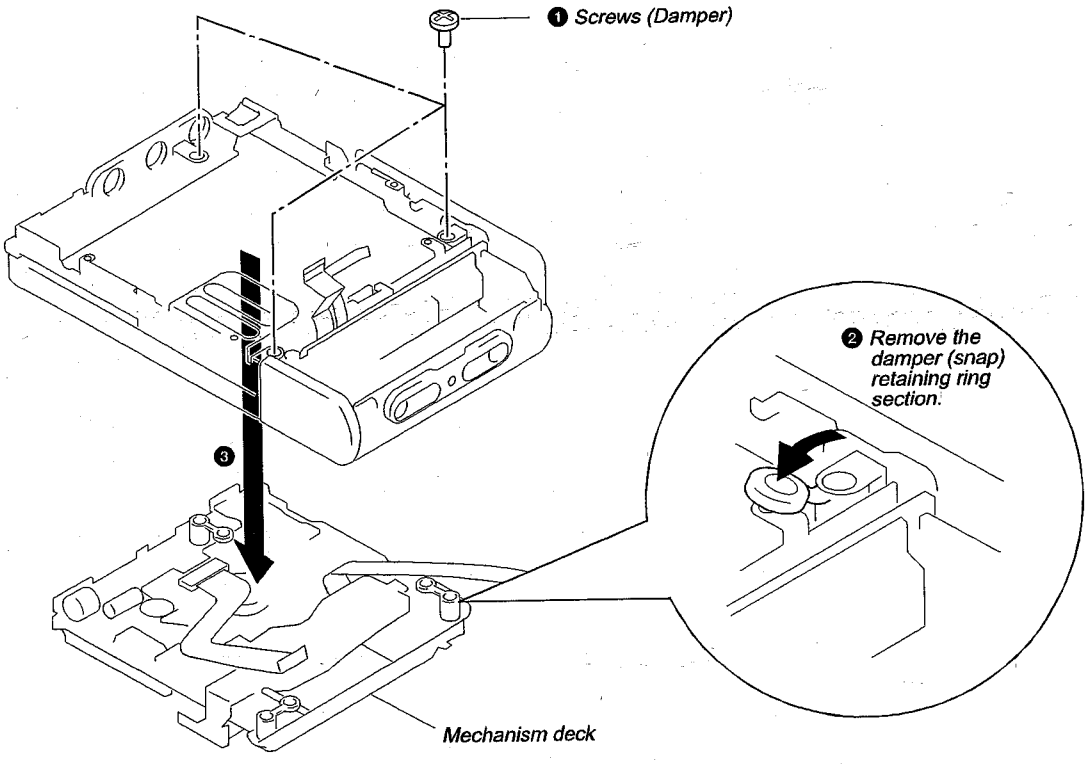
3-1. UPPER PANEL ASSY, BOTTOM PANEL ASSY REMOVAL



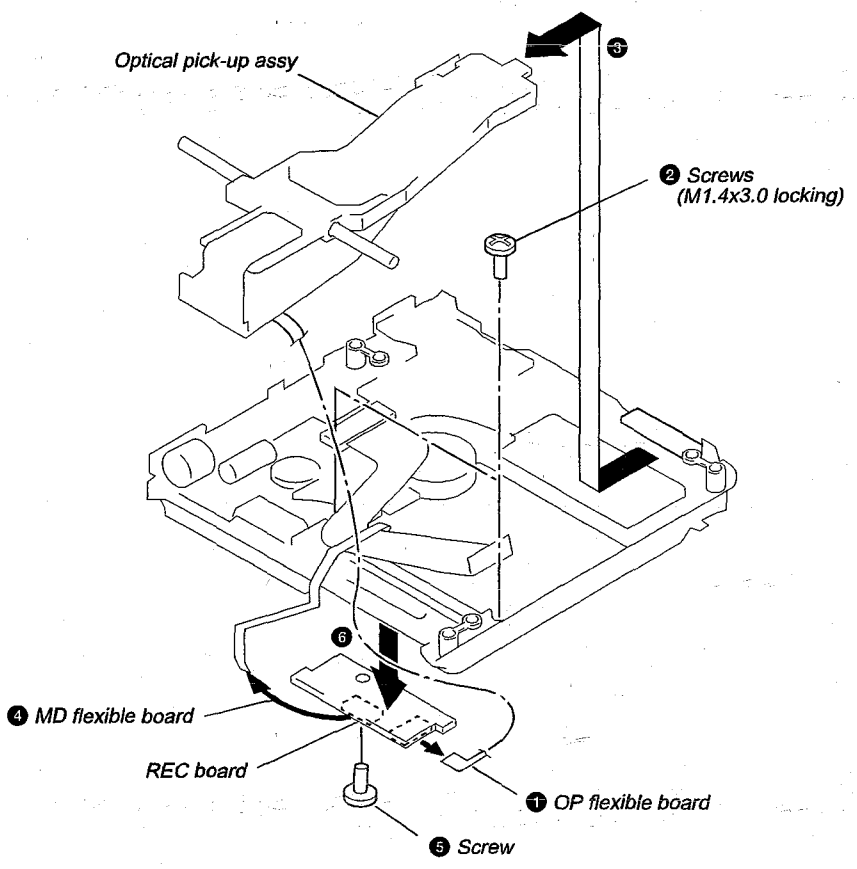
3-2. MAIN BOARD REMOVAL



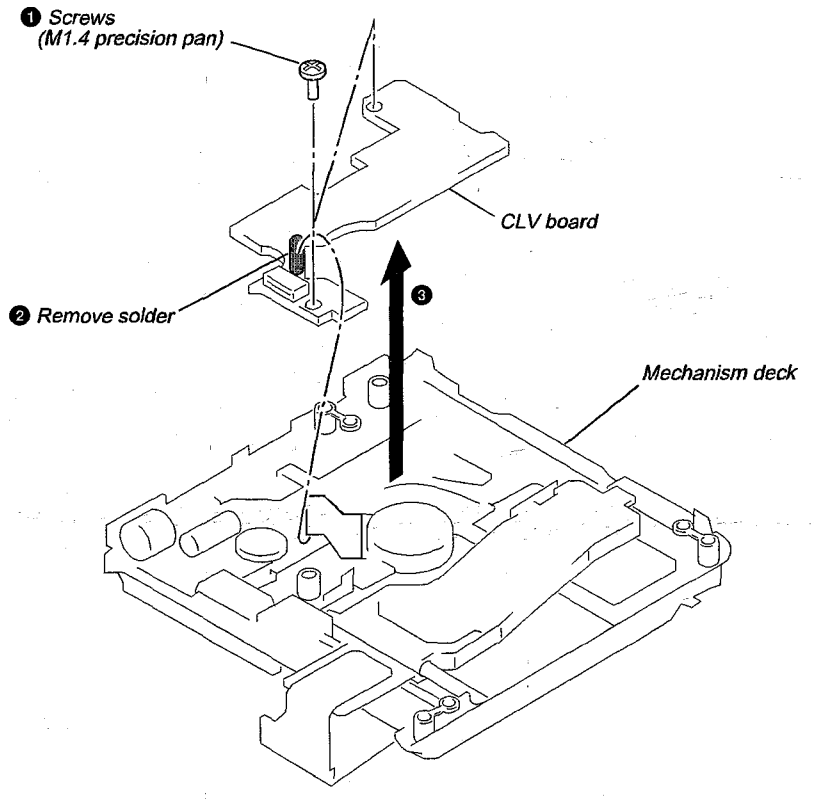
3-3. MECHANISM DECK (MT-MZR50-143) REMOVAL



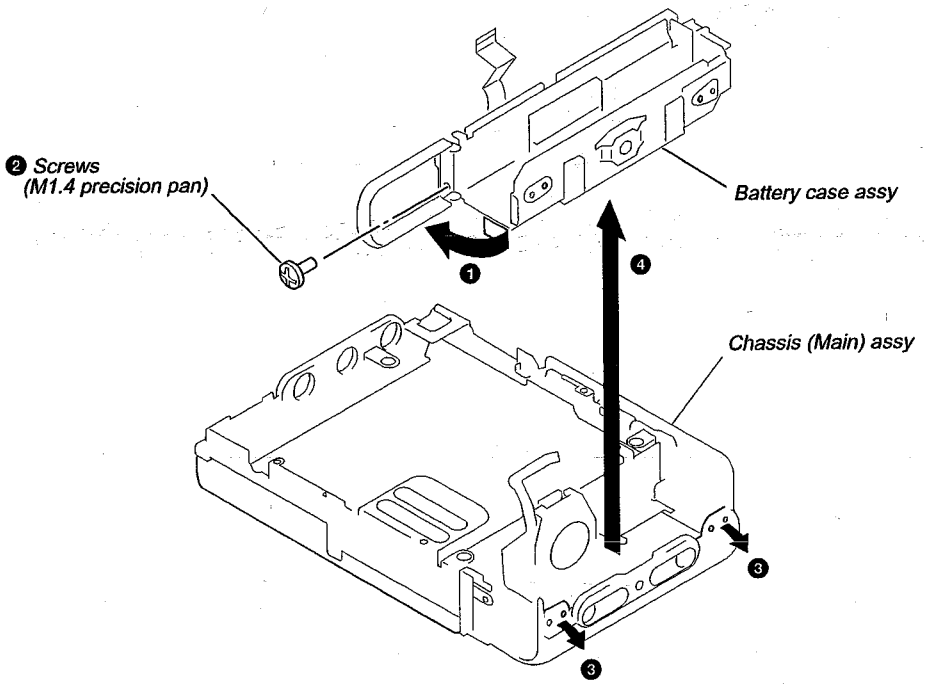
3-4. OPTICAL PICK-UP ASSY, REC BOARD REMOVAL



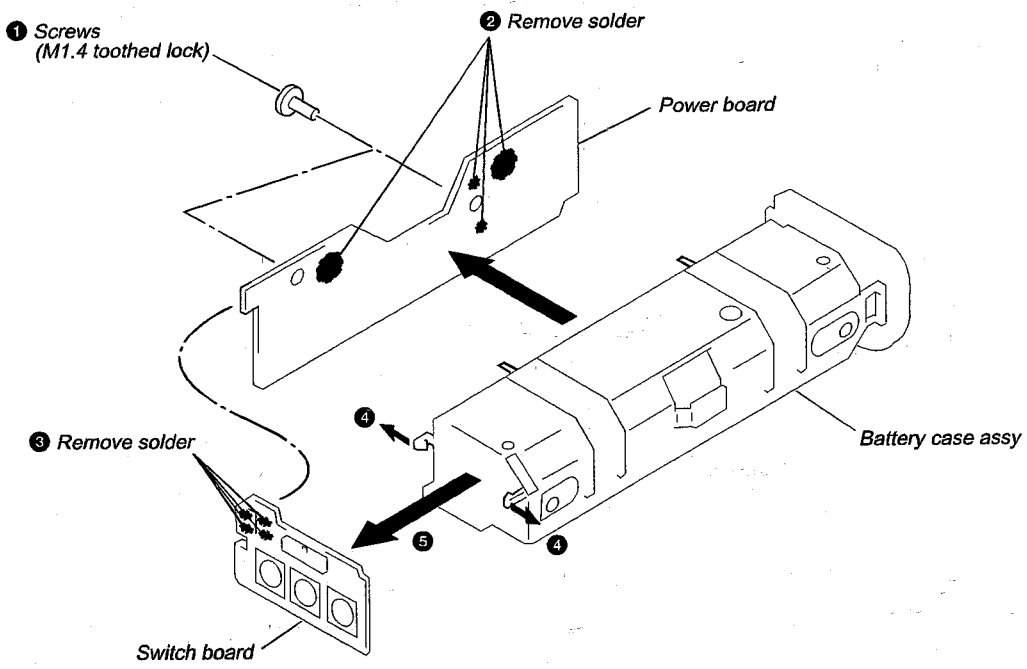
3-5. CLV BOARD REMOVAL



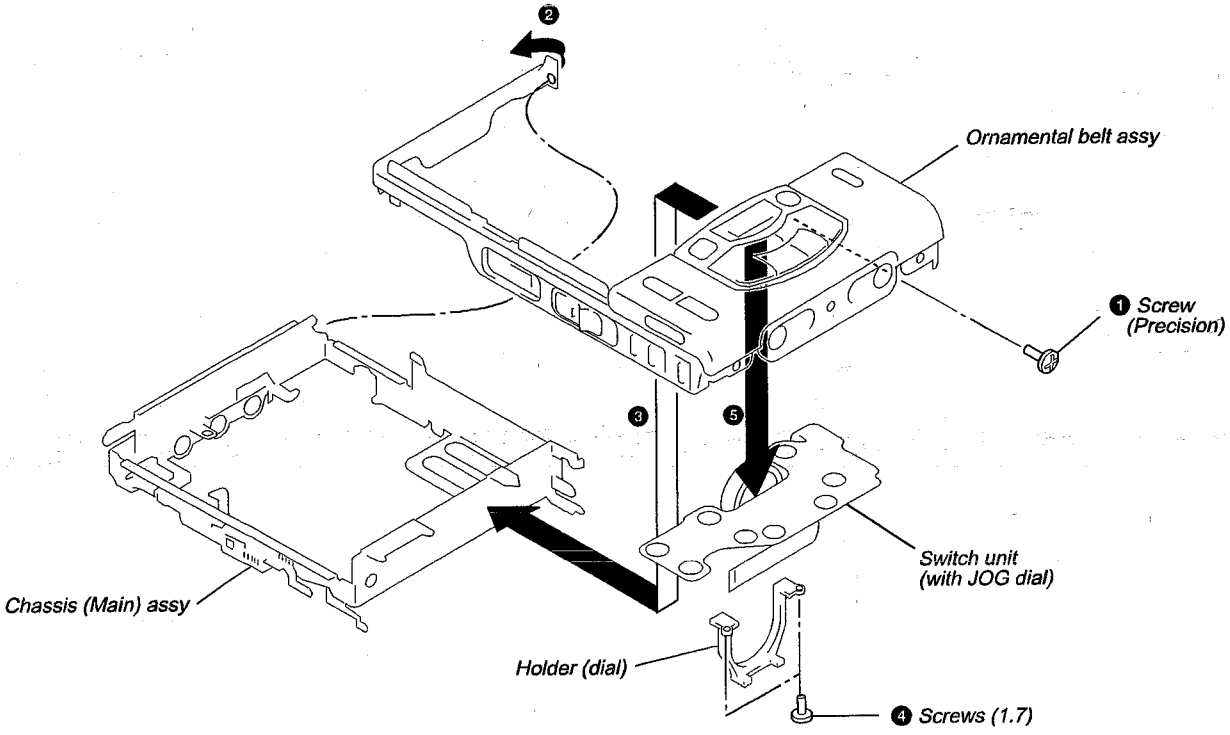
3-6. BATTERY CASE ASSY REMOVAL



3-7. POWER BOARD, SWITCH BOARD REMOVAL



3-8. SWITCH UNIT (WITH JOG DIAL) REMOVAL



SECTION 4
TEST MODE

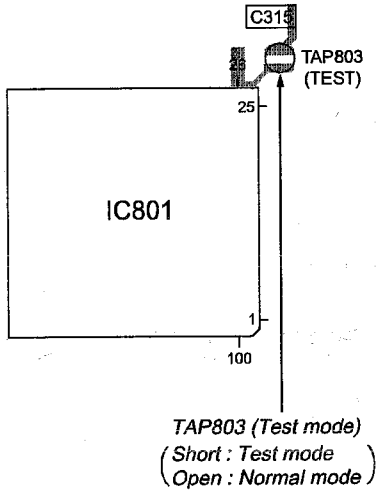
[Outline]

- The general adjustment mode of this unit performs CD and MO adjustments automatically when set. In this mode, the disc is determined if CD or MO and adjustments are automatically performed in order. If errors are detected , the faulty locations are displayed. The servo mode performs each adjustment automatically.

[Setting the Test Mode]

Short-circuit the soldering bridge of TAP803 (TEST) on the main board (connect Pin ㉘ of IC801 to the GND) and turn on the power supply.

[MAIN BOARD] (SIDE B)

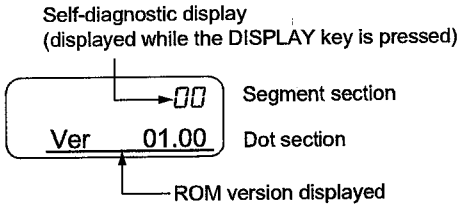


[Exiting the Test Mode]

Turn off the power supply and open the soldering bridge of TAP803 (TEST) on the main board.

[Operations When Test Mode is Set]

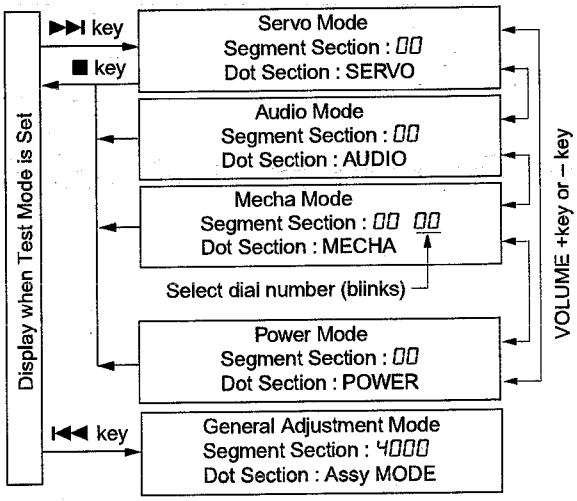
When the test mode is set, the LCD will display as follows.



- The LCD performs the following repeatedly.
  ROM version displayed ➡ all lit ➡ all off
- The display can be held and checked by pressing ▮▮ key.
- The self-diagnostic display appears while the DISPLAY key is pressed.

[Structure of Test Mode]

The test mode of this unit consists of the following five modes.

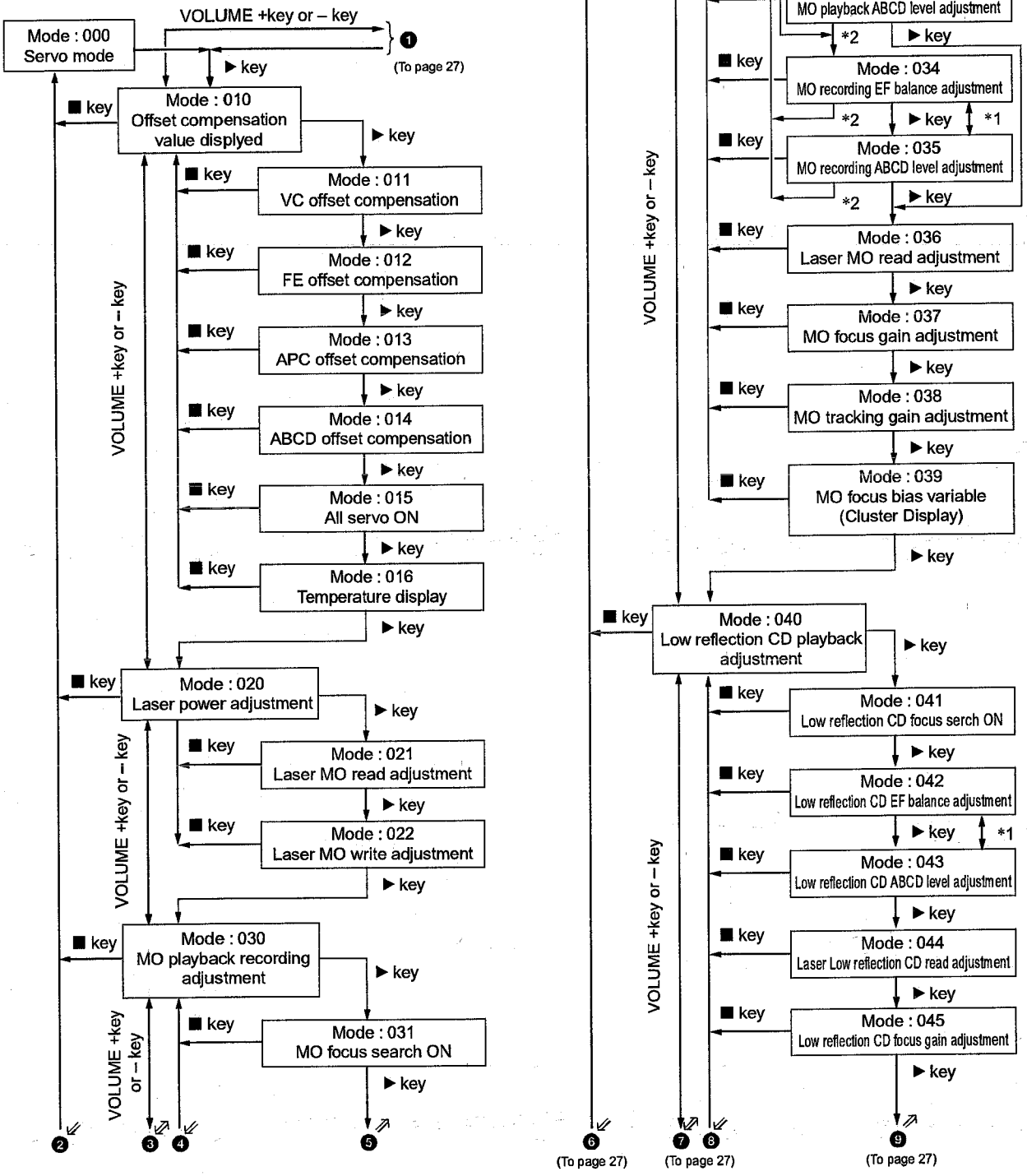


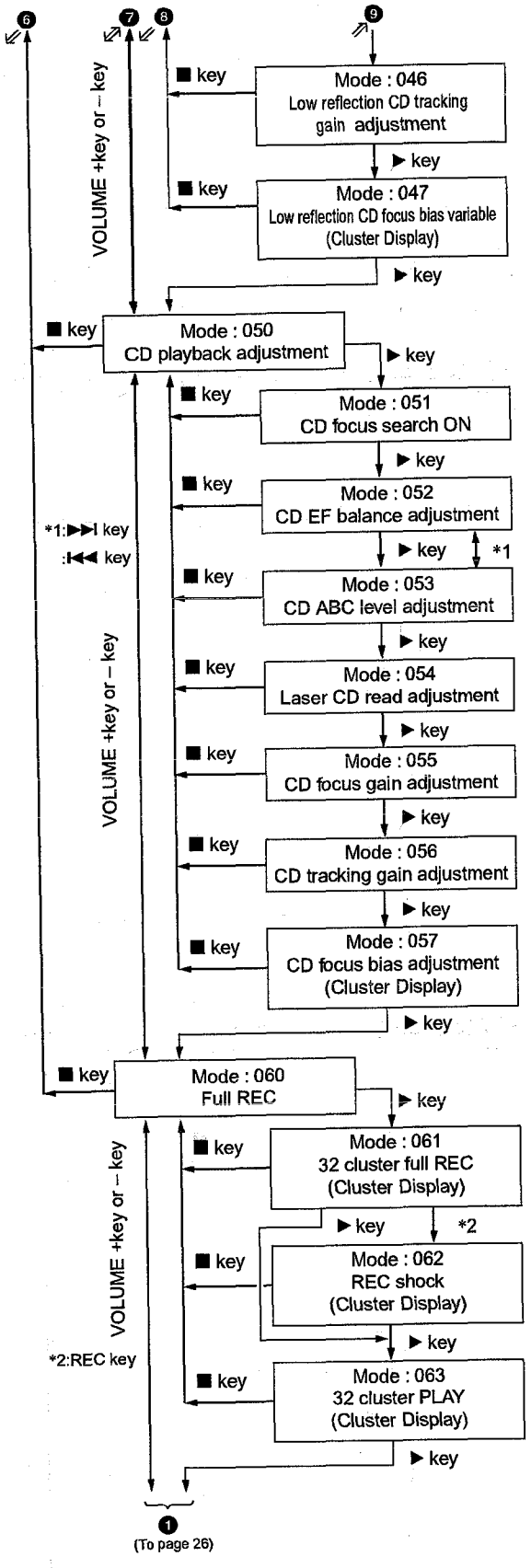
- In modes other than the general adjustment mode, the last two digits of the mode number will be displayed at the 00 section.

[Servo Mode]

- Set the test mode, press the ▶▶I key, and set the servo mode using the VOLUME + and – keys.
- When the servo mode is set, the optical pickup will move to the outer circumference or inner circumference if the ▶▶I key or I◀◀ key is pressed.
- To set other modes, refer to " Structure of Test Mode ".

• Structure of Servo Mode

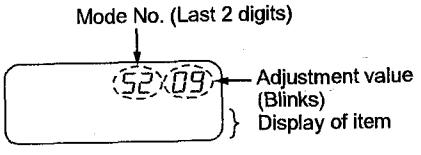




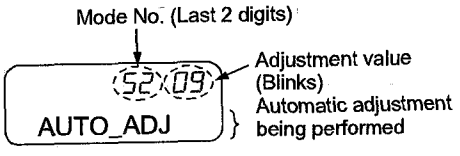
• Adjusting Method

Note : There is basically no display for individual adjustment items. Only such upper position titles as SERVO, AUDIO, etc. (100s position) are displayed.

1. When the adjustment modes are set according to "Structure of Servo Mode", the last two digits of the mode number and the adjustment value written in the EEPROM will be displayed blinking.

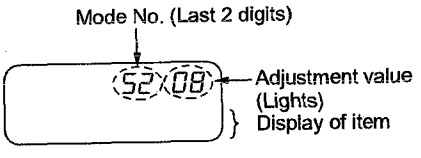


2. When the ▮▮ key is pressed, the following will be displayed and adjustments will be performed automatically.

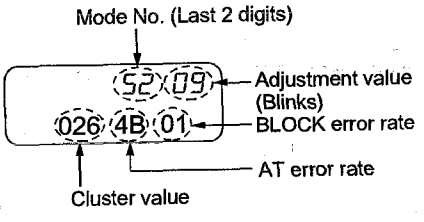


Note : The adjustment value can be changed as desired using the VOLUME + and – keys, but try to avoid this as much as possible.

3. After the adjustments are completed, the item is displayed again and the adjustment value that was blinking lights up.



• Cluster Display

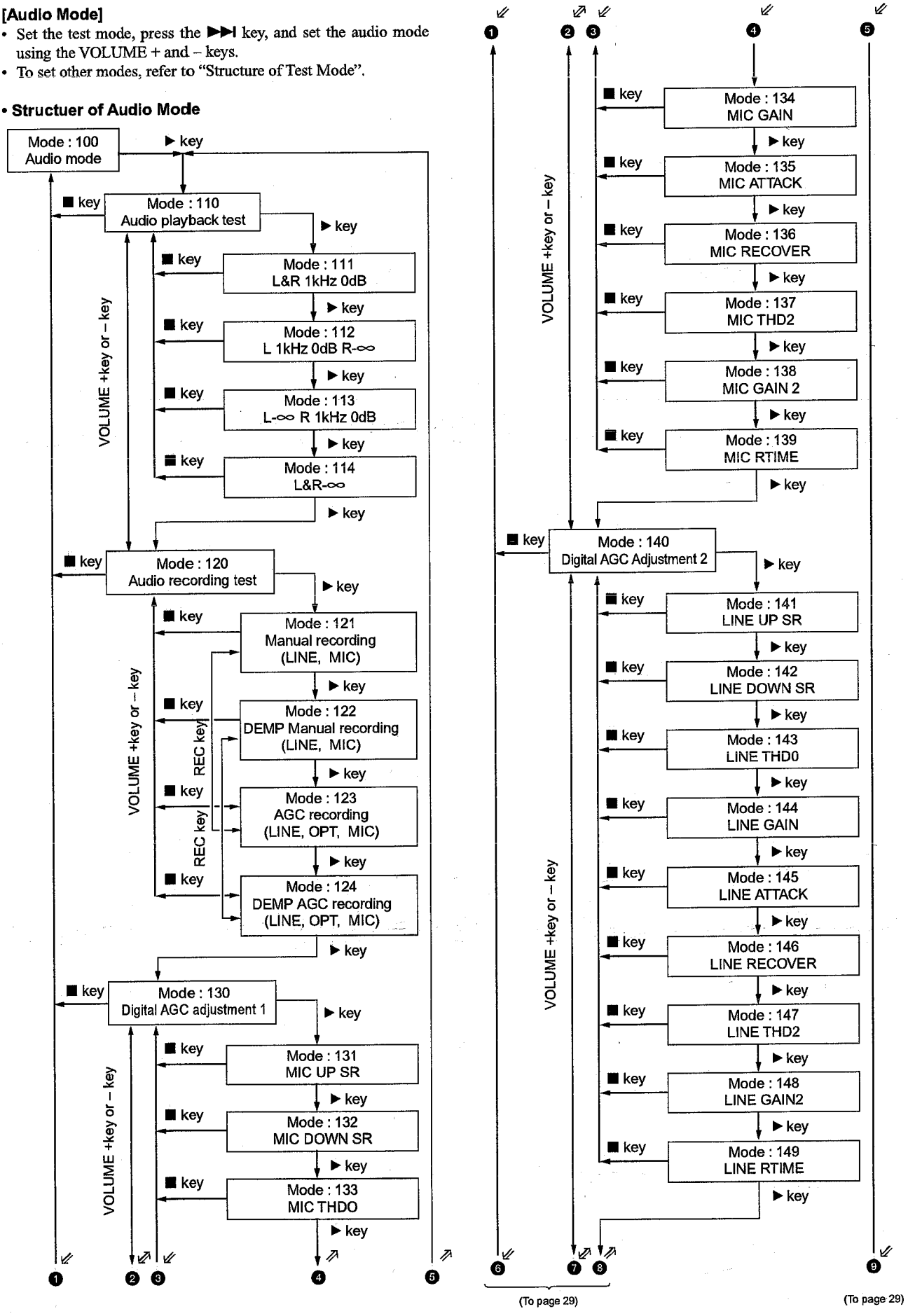


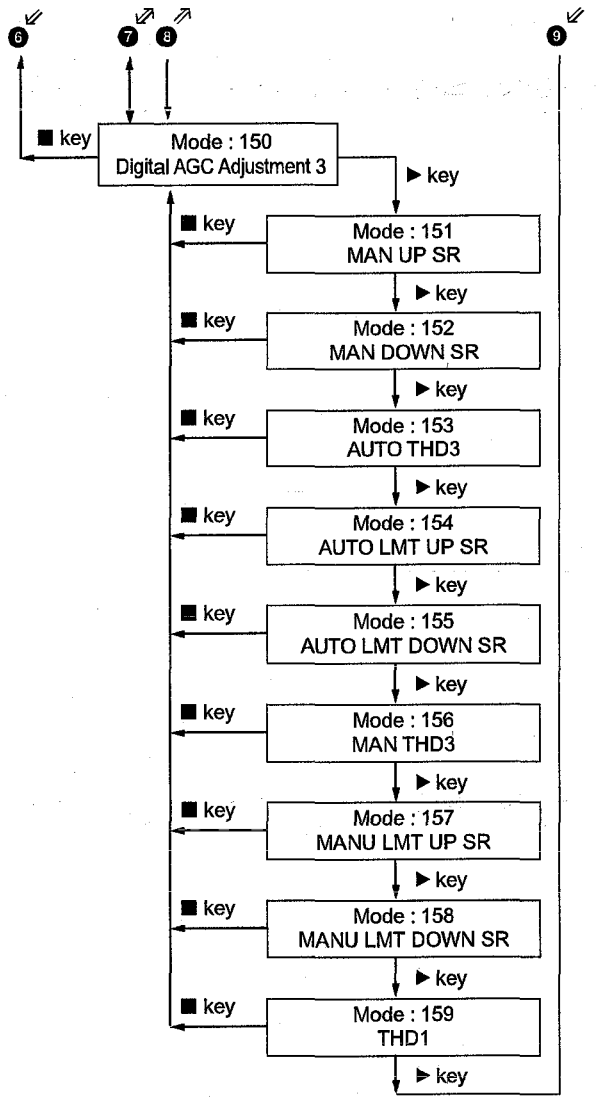
• Nothing is performed at mode numbers 070 to 073.

[Audio Mode]

- Set the test mode, press the ▶▶I key, and set the audio mode using the VOLUME + and – keys.
- To set other modes, refer to "Structure of Test Mode".

• Structuer of Audio Mode



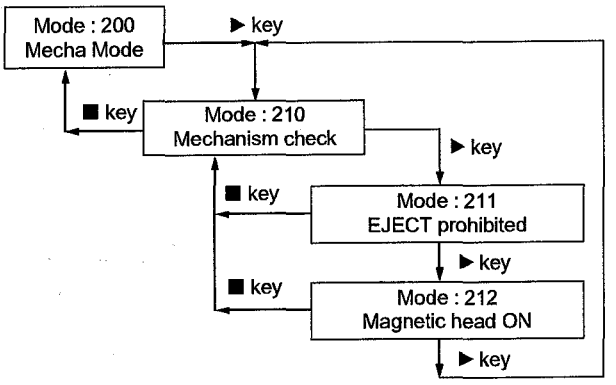


- When the ❚❚ key is pressed at mode numbers 100, 110 to 114, the buzzer will sound.
- When the VOLUME keys + and – are pressed at mode numbers 111 to 113, 123, 124, the volume of the headphone output will increase/decrease.
  When the ⏮ key or ⏭ key is pressed, the volume of the headphone output will become maximum/minimum.
- When the VOLUME keys + and – are pressed at mode numbers 121 or 122, the recording level will increase/decrease.
  When the ⏮ key or ⏭ key is pressed, the recording level will become maximum/minimum.
- The record LED lights up in mode numbers 121 to 124 and are off at mode numbers 110 to 114.
- At mode numbers 121 to 124, the microprocessor will detect the port and automatically determine the input.
- The following indicators light up with the deck sensor switches at ON.
  At REFLECT switch ON : the "⮌" indicator lights up
  At MEDIA switch ON : the "SHUF" indicator lights up
  At PROTECT switch ON : the "1" indicator lights up

[Mecha Mode]

- Set the test mode, press the ⏭ key, and set the mecha mode using the VOLUME + and – keys.
- To set other modes, refer to "Structure of Test Mode".

• Structure of Mecha Mode

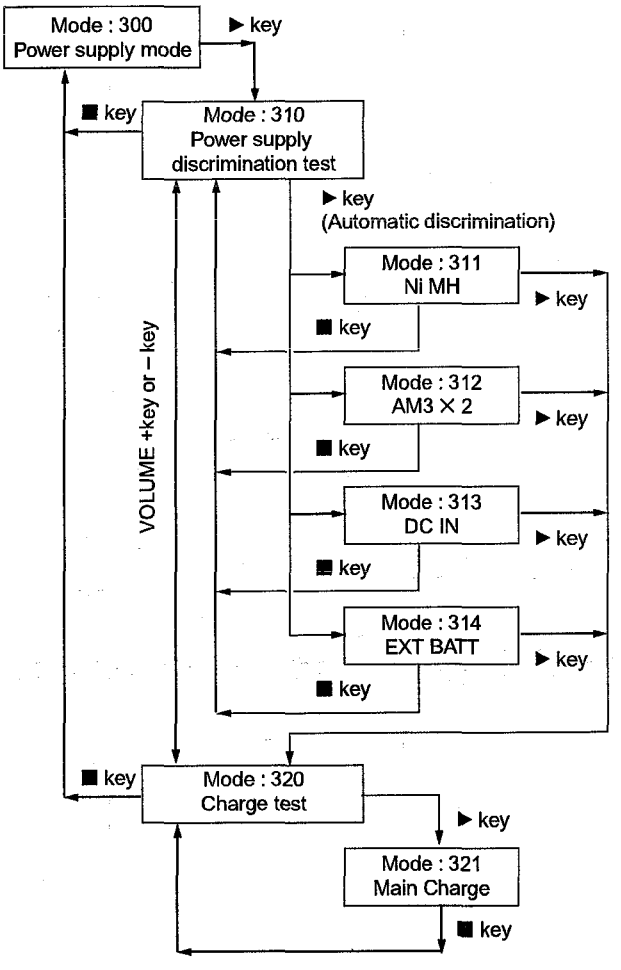


- At mode numbers 200, 210 to 212, the optical pick up can be moved to the outer circumference or inner circumference using the ⏮ or ⏭ key.

[Power supply Mode]

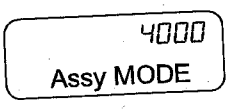
- Set the test mode, press the + key, and set the power supply mode using the VOLUME + and – keys.
- To set other modes, refer to "Structure of Test Mode".

• Structure of Power Supply Mode

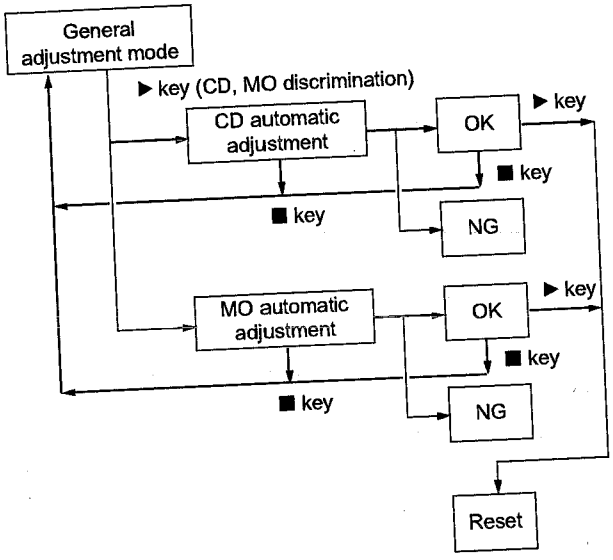


[General Adjustment Mode]

- Set the test mode, press the ▶▶I key, and set the general adjustment mode.
- To set other modes, cut off the power once and power on again.
- When the general adjustment mode is set, the LCD display will be as follows.



• Structure of General Adjustment Mode



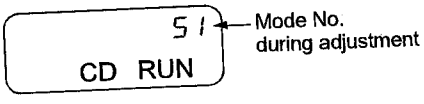
Adjusting Method :

1. Set the test mode, press the I◀◀ key to set the general adjustment mode.
2. Load the CD test disc (TDYS-1) or SONY MO disc available on the market.
3. When the ▶ key is pressed, the disc is determined if CD or MO, the automatic adjustment modes are set, and adjustments are performed automatically in the following order.

• CD Automatic Adjustment

No.	Mode No.	Adjustment
1	052	CD EF balance adjustment
2	053	CD ABCD level adjustment
3	055	CD focus gain adjustment
4	056	CD tracking gain adjustment
5	057	CD focus bias adjustment

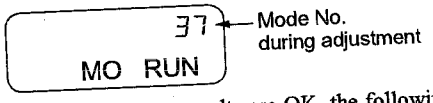
* Display during CD automatic adjustment



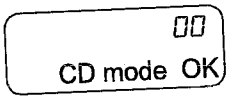
• MO Automatic Adjustment

No.	Mode No.	Adjustment
1	032	MO playback EF balance adjustment
2	033	MO playback ABCD level adjustment
3	034	MO recording EF balance adjustment
4	035	MO recording ABCD level adjustment
5	037	MO focus gain adjustment
6	038	MO tracking gain adjustment
7	061	32 cluster full REC
8	062	REC shock
9	063	32 cluster PLAY
10	039	MO focus bias adjustment
11	042	Low reflection CD EF balance adjustment
12	043	Low reflection CD ABCD level adjustment
13	045	Laser low reflection CD read adjustment
14	046	Low reflection CD tracking gain adjustment

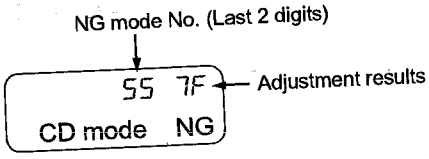
* Display during MO automatic adjustment



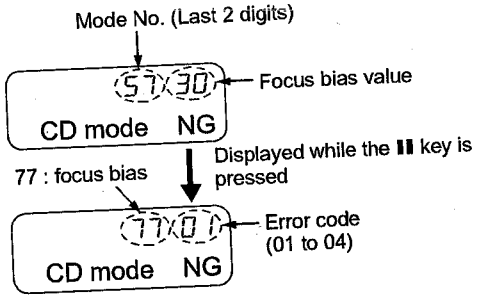
4. If the automatic adjustment results are OK, the following will be displayed.



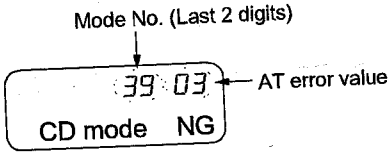
5. If the automatic adjustment results are NG, the following will be displayed.



* When the mode number is 039, 057 and the focus bias value is NG, the following will be displayed



* When the mode number is 039, 061 and the AT error rate is NG, the following will be displayed.



* When NG, set the servo mode and perform the automatic adjustment of the NG item. (Refer to "Servo Mode").

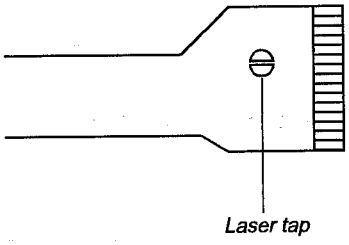
SECTION 5
ADJUSTMENTS

5-1. Precautions for Laser Diode Emission Check

When checking the emission of the laser diode during adjustments, never view directly downwards as this may lead to blindness.

5-2. Precautions for Using Optical Pickup (KMS-280A)

As the laser diode inside the optical pickup damages by static electricity easily, solder the laser tap of the flexible board when handling. Also take the necessary measures to prevent damages by static electricity. Handle the flexible board with care as it breaks easily



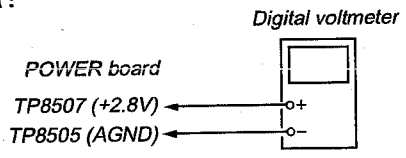
Optical Pickup flexible board

5-3. Precautions for Adjustment

1) Perform all adjustments in the order given in the test mode. After adjusting, exit the test mode.
2) Use the following tools and measuring instruments.
   - CD test disc TDYS-1 (Parts Code : 4-963-646-01)
   - Recorded MO disc PTDM-1 (Parts Code : J-2501-054-A)
   - Laser power meter LPM-1 (Parts Code : J-2501-046-A)
   - Oscilloscope (Frequency band above 40MHz. Perform the calibration of probe first before measuring.)
   - Digital voltmeter
3) Unless specified othewise, supply DC 6V from the DC IN 6V jack.
4) Swtich, knob positions
   Hold switch ..... OFF
   AVLS switch ..... NORM

5-4. DD 2.8V Adjustment

Connection :

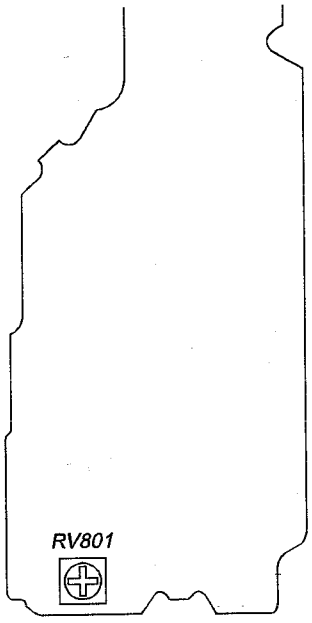


Adjusting Method :

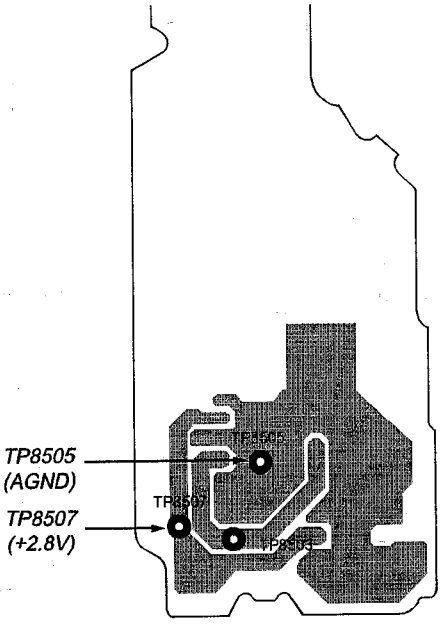
1. Connect the digital voltmeter to test point TP8507 (+2.8V) and TP8505 (AGND) on power board.
2. Adjust the RV801 for 2.8V reading on the digital voltmeter.

Connection point and adjustment location : POWER board

[POWER BOARD]
(SIDE A)

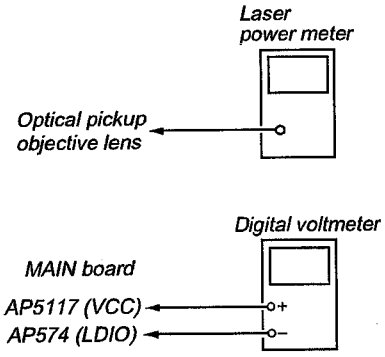


[POWER BOARD]
(SIDE B)



5-5. Laser Power Check

Connection :

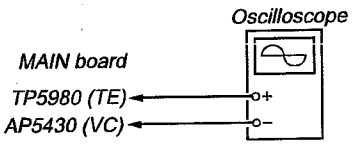


Adjusting Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ▶ key, and set the laser power adjustment mode (Mode : 020) using the volume + and – keys.
3. Press the ⏮ key and move the optical pickup to the inner most circumference.
4. Open the cover and set the laser power meter on the objective lens of the optical pickup.
5. Press the ▶ key, and set the laser MO read adjustment mode (Mode : 021).
6. Check that the laser power meter reading is 0.85 ±0.085mW.
7. Check that the voltage between AP574 (LDIO) and AP5117 (VCC) at this time is below 44mV.
8. Press the ▶ key, and set the laser MO write adjustment mode (Mode : 022).
9. Check that the laser power meter reading is 6.8 ±0.68mW.
10. Press the ⏸ key to finalize the adjustment data.
11. Check that the voltage between AP574 (LDIO) and AP5117 (VCC) at this time is below 80mV.
12. Press the ■ key.
13. Exit the test mode.

5-6. MO Traverse Adjustment

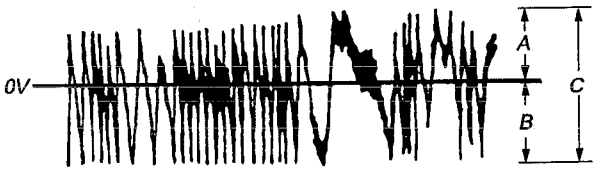
Connection :



Adjusting Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ▶ key, and set the MO playback adjustment mode (Mode : 030) using the volume + and – keys.
3. Press the ⏮ and ⏭ keys and move the optical pickup to the center circumference.
4. Load any MO disc available on the market.
5. When the ▶ key is pressed, the MO playback EF balance adjustment mode (Mode : 032) will be set after focus search ON (Mode : 031).
6. Press the ⏸ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.
7. Slide the recording key and set the MO recording EF balance adjustment mode (Mode : 034).
8. Press the ⏸ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse Waveform)



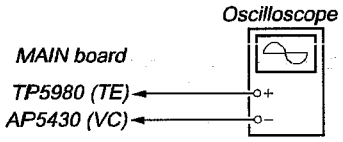
Specification : A = B, C ≧ 1.0 Vp-p

9. Check that the traverse level at this time is above 1.0Vp-p.
10. Press the ■ key.
11. Exit the test mode.

Note : Using a recorded disc in this adjustment will erase the data.

5-7. Low Reflection CD Traverse Adjustment

Connection :



Adjusting Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ▶ key, and set the low reflection CD playback adjustment mode (Mode : 040) using the volume + and – keys.
3. Load any MO disc available on the market.
4. When the ▶ key is pressed, the low reflection CD playback EF balance adjustment mode (Mode : 042) will be set after low reflection CD focus search ON (Mode : 041).
5. Press the ▮▮ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

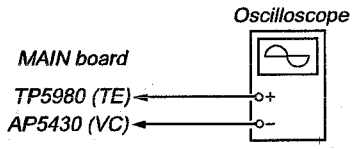
(Traverse Waveform)

Specification : A = B, C ≧0.9Vp-p

6. Check that the traverse level at this time is above 0.9Vp-p.
7. Press the ■ key.
8. Exit the test mode.

5-8. CD Traverse Adjustment

Connection :



Adjusting Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ▶ key, and set the CD playback adjustment mode (Mode : 050) using the volume + and – keys.
3. Press the ⏮ and ⏭ keys and move the optical pickup to the center circumference.
4. Load a CD test disc (TDYS-1).
5. When the ▶ key is pressed, the CD playback EF balance adjustment mode (Mode : 052) will be set after CD focus search ON (Mode : 051).
6. Press the ▮▮ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

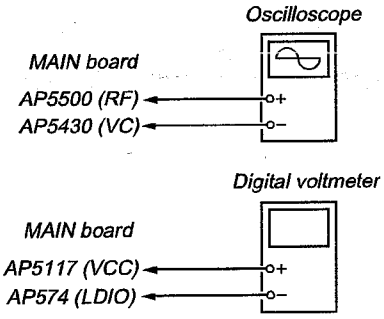
(Traverse Waveform)

Specification : A = B, C ≧1.0 Vp-p

7. Check that the traverse level at this time is above 1.0Vp-p.
8. Press the ■ key.
9. Exit the test mode.

5-9. CD RF Level Check

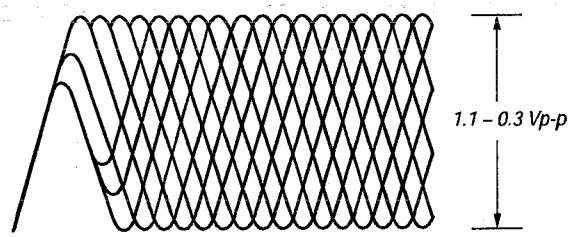
Connection :



Adjusting Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ▶ key, and set the CD playback adjustment mode (Mode : 050) using the volume + and -keys.
3. Press the ⏮ and ⏭ keys and move the optical pickup to the center circumference.
4. Load a CD test disc (TDYS-1).
5. When the ▶ key is pressed, the CD EF balance adjustment mode (Mode : 052) will be set after CD focus search ON (Mode : 051).
6. When the ▶ key is pressed, the ABCD level adjustment mode (Mode : 053) is set.
7. Press the ▮▮ key to perform automatic adjustment, and check that the RF level is 1.1 ±0.3Vp-p.

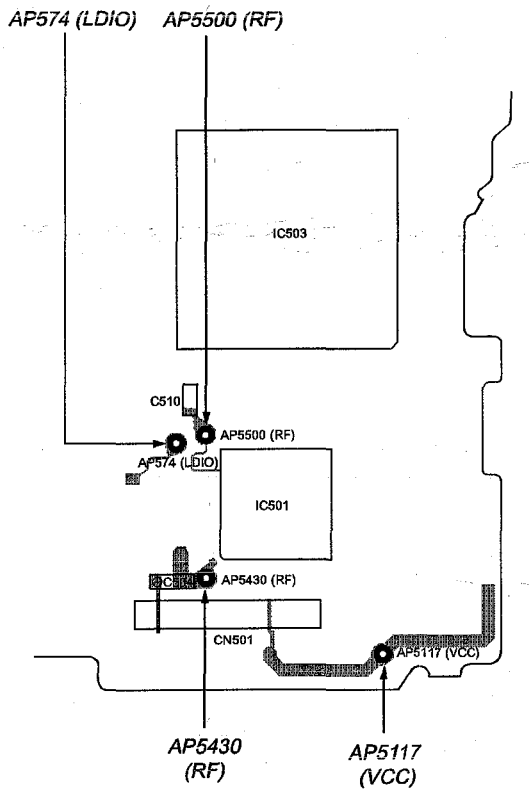
(RF waveform)



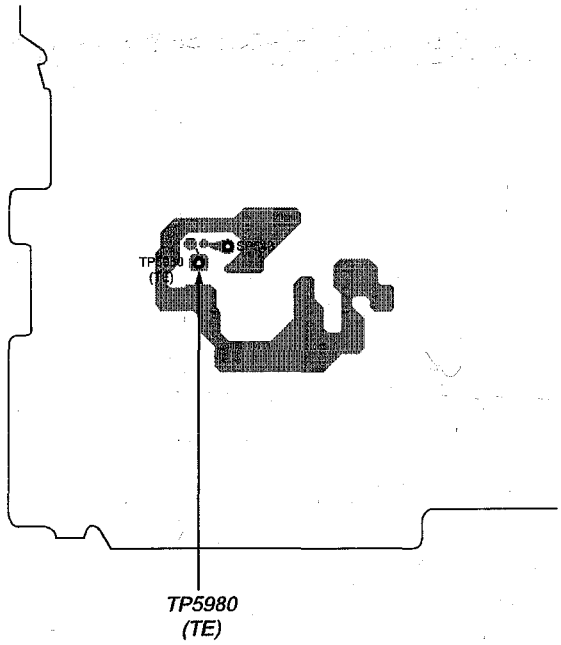
8. Check that the voltage between AP574 (LDIO) and AP5117 (VCC) and at this time is below 40mV.
9. Press the ■ key.
10. Exit the test mode.

Adjustment Location :

[MAIN BOARD] (SIDE B)



[MAIN BOARD] (SIDE A)



SECTION 6
DIAGRAMS

6-1. EXPLANATION OF IC TERMINALS

IC503 DIGITAL SERVO, ATRAC (CXD2652AR)

Pin No.	Pin name	I/O	Description
1	MNT 0	O	Traverse count signal output.
2	MNT 1	O	Track jump detect output.
3	MNT 2	–	Not used (Open).
4	MNT 3	–	Not used (Open).
5	SWDT	I	Inputs write data signal from system controller (IC801).
6	SCLK	I	Inputs serial clock signal from system controller (IC801).
7	XLAT	I	Inputs serial latch signal from system controller (IC801).
8	SRDT	O	Outputs write data signal to system controller (IC801).
9	SENS	O	Outputs internal status (SENSE) to system controller (IC801).
10	XRST	I	Inputs reset signal from system controller (IC801). Reset : L
11	SQSY	O	Output subcode Q sync (SCOR) to system controller (IC801). Outputs "L" every 13.3msec. Outputs "H" at all most mostly.
12	DQSY	O	Outputs digital-in U-bit CD format subcode Q sync (SCOR) to system controller (IC801). Outputs "L" every 13.3msec. Outputs "H" at all most mostly.
13	WRPWR	I	Inputs laser power switching signal from system controller (IC801).
14	NC	–	Not used (Open).
15	TX	I	Input of write data taransmission timing from system controller (IC801). Also used as magnetic field head ON/OFF output.
16	OSC1	O	Clock output (22.5MHz).
17	OSC0	I	Clock input (22.5MHz).
18	XTSL	–	Not used (Fixed at "L")
19	NC	–	Not used (Ground).
20	RVss	–	Connect to ground.
21	DIN	I	Digital audio signal input pin (For optical input).
22	NC	–	Not used (Open).
23	ADDT	I	Audio data input from A/D converter (IC303).
24	DATA	O	Monitor/decode audio data output to A/D converter (IC303).
25	ALRCK	O	L/R clock output to D/A converter (IC303).
26	ABCK	O	Bit clock signal output to A/D, D/A converter (IC303).
27	FS256	O	11.2896MHz clock output (MCLK).
28	DVDD	–	Power supply (+2.8V) for digital.
29 – 39	A00 – A08, A10, A11	O	Address signal output to RAM (IC509).
40	DVss	–	Ground terminal.
41	XOE	O	Output enable contol signal output to RAM (IC509).
42	XCAS	O	Column address strobe singal output to RAM (IC509).
43	A09	O	Address signal output to RAM (IC509).
44	XRAS	O	Row address strobe signal output to RAM (IC509).
45	XWE	O	Read/write control signal output to RAM (IC509).
46 – 49	D0 – D3	I	Data signal input from RAM (IC509).
50	MVCI	–	Not used (Connect to ground).
51	ASYO	O	Playback EFM full-swing output (L : VSS, H : VDD).
52	ASYI	I	Playback EFM asymmetry comparate voltage input.
53	AVDD	–	Power supply (+2.8V) for analog.
54	BIAS	I	Playback EFM asymmetry circuit constant current input.
55	RFI	I	Inputs playback EFM RF signal from RF amplifier (IC501).

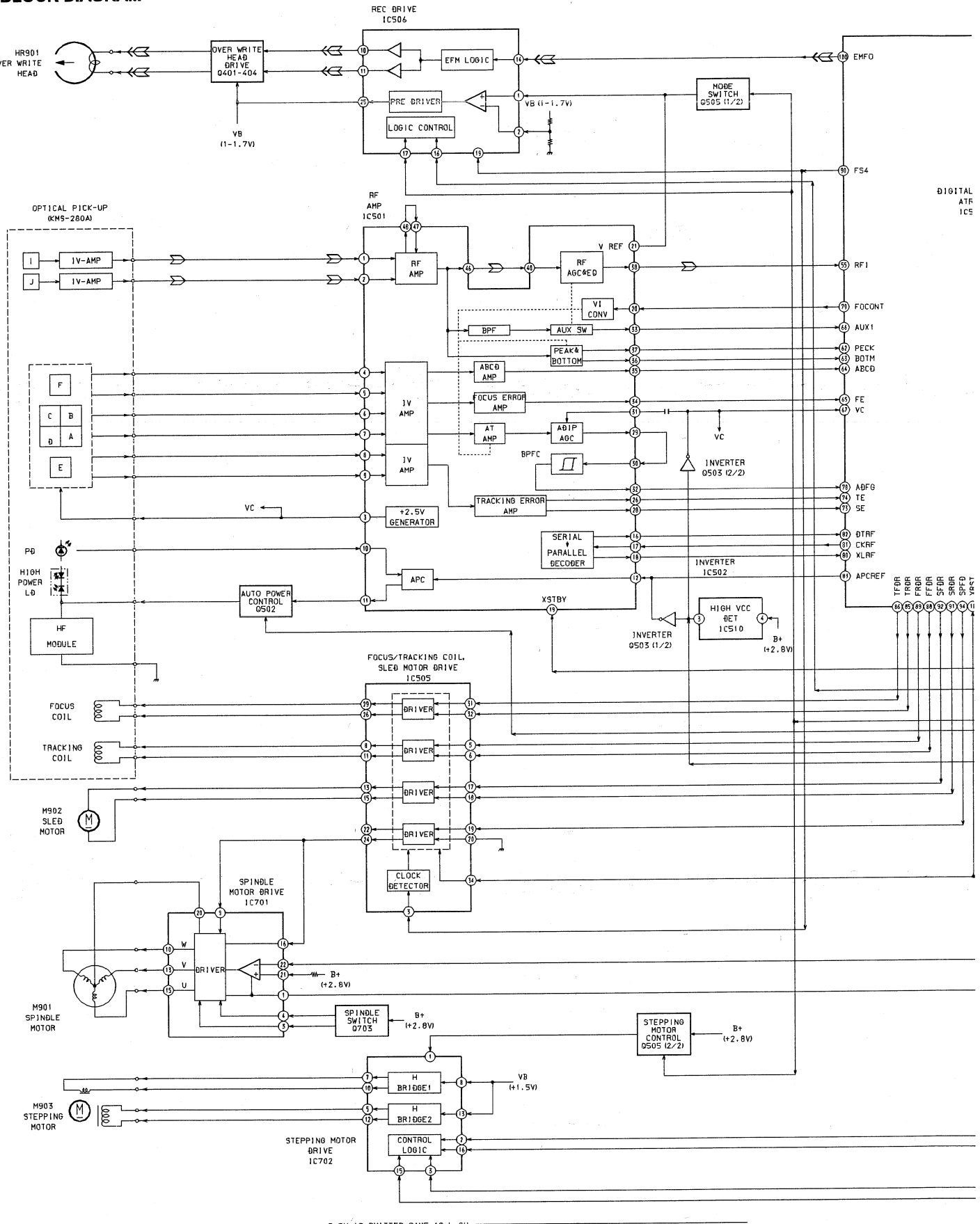
Pin No.	Pin name	I/O	Description
56	AVss	–	Ground terminal.
57	PDO	–	Not used (Open).
58	PCO	O	Decoder PLL master clock PLL phase comparison output.
59	FILI	I	Decoder PLL master clock PLL filter input.
60	FILO	O	Decoder PLL master clock PLL filter output.
61	CLTV	I	Decoder PLL master clock PLL VCO control voltage input.
62	PEAK	I	Inputs peak hold signal for light amount signal from RF amplifier (IC501).
63	BOTM	I	Inputs bottom hold signal for light amount signal from RF amplifier (IC501).
64	ABCD	I	Light amount signal from RF amplifier (IC501).
65	FE	I	Input focus error signal from RF amplifier (IC501).
66	AUX1	I	Input of auxiliary signal from RF amplifier (IC501).
67	VC	I	Input of middle point voltage (+1.4V) from RF amplifier (IC501).
68	ADIO	–	Not used (Open).
69	AVDD	–	Power supply (+2.8V) for analog.
70	ADRT	–	Not used (Connect to +2.8V).
71	ADRB	–	Not used (Ground).
72	AVss	–	Ground terminal.
73	SE	I	Input of sled error signal from RF amplifier (IC501).
74	TE	I	Input of tracking error signal from RF amplifier (IC501).
75	AUX2	–	Not used (Connect to +2.8V).
76	DCHG	–	Not used (Connect to +2.8V).
77	APC	–	Not used (Connect to +2.8V).
78	ADFG	I	Input of ADIP dual FM signal from RF amplifier (IC501) (22.05kHz±1kHz). (TTL Schmidt input)
79	FO CONT	O	Focus control output to RF amplifier (IC501).
80	XLRF	I	Latch signal input from RF amplifier (IC501).
81	CKRF	O	RFCK clock (7.35kHz) signal output.
82	DTRF	I	Serial data input from system controller (IC801).
83	APCREF	I	Laser power setting signal input.
84	LDDR	–	Not used (Open).
85	TRDR	O	Tracking servo drive signal output (–).
86	TFDR	O	Tracking servo drive signal output (+).
87	DVDD	–	Power supply (+2.8V) for digital.
88	FFDR	O	Focus servo drive signal output (+).
89	FRDR	O	Focus servo drive signal output (–).
90	FS4	O	176.4kHz clock signal output (MCLK).
91	SRDR	O	Sled servo drive signal output (–).
92	SFDR	O	Sled servo drive signal output (+).
93	SPRD	O	Spindle servo drive signal output (–).
94	SPFD	O	Spindle servo drive signal output (+).
95	FGIN	I	FG signal input from spindle motor driver (IC701).
96	TEST1	–	Not used (Connect to ground).
97	TEST2	–	Not used (Connect to ground).
98	TEST3	–	Not used (Connect to ground).
99	DVss	–	Ground terminal.
100	EFMO	O	EFM recording signal ouput.

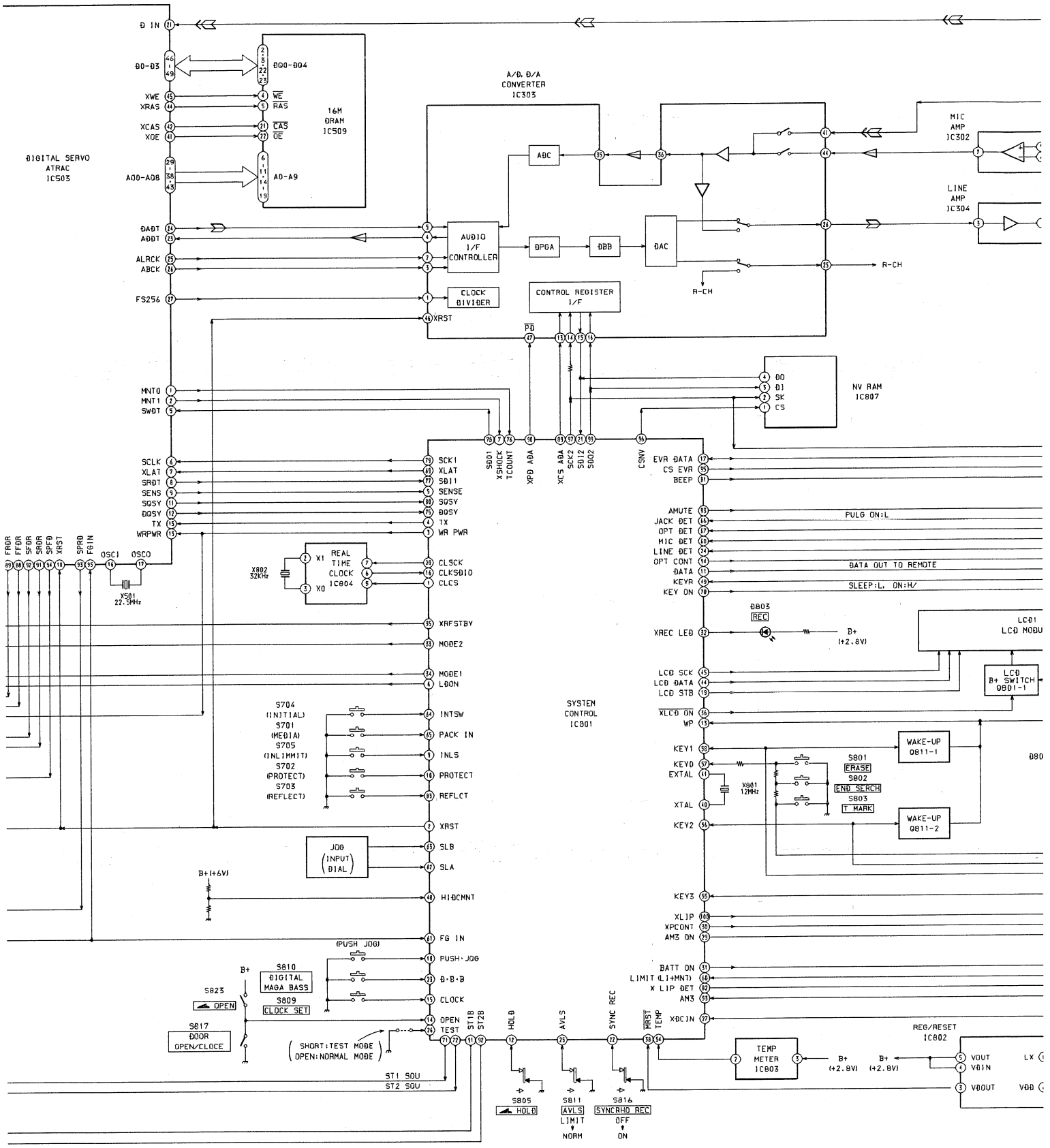
IC801 SYSTEM CONTROL (CXP81960M-652R)

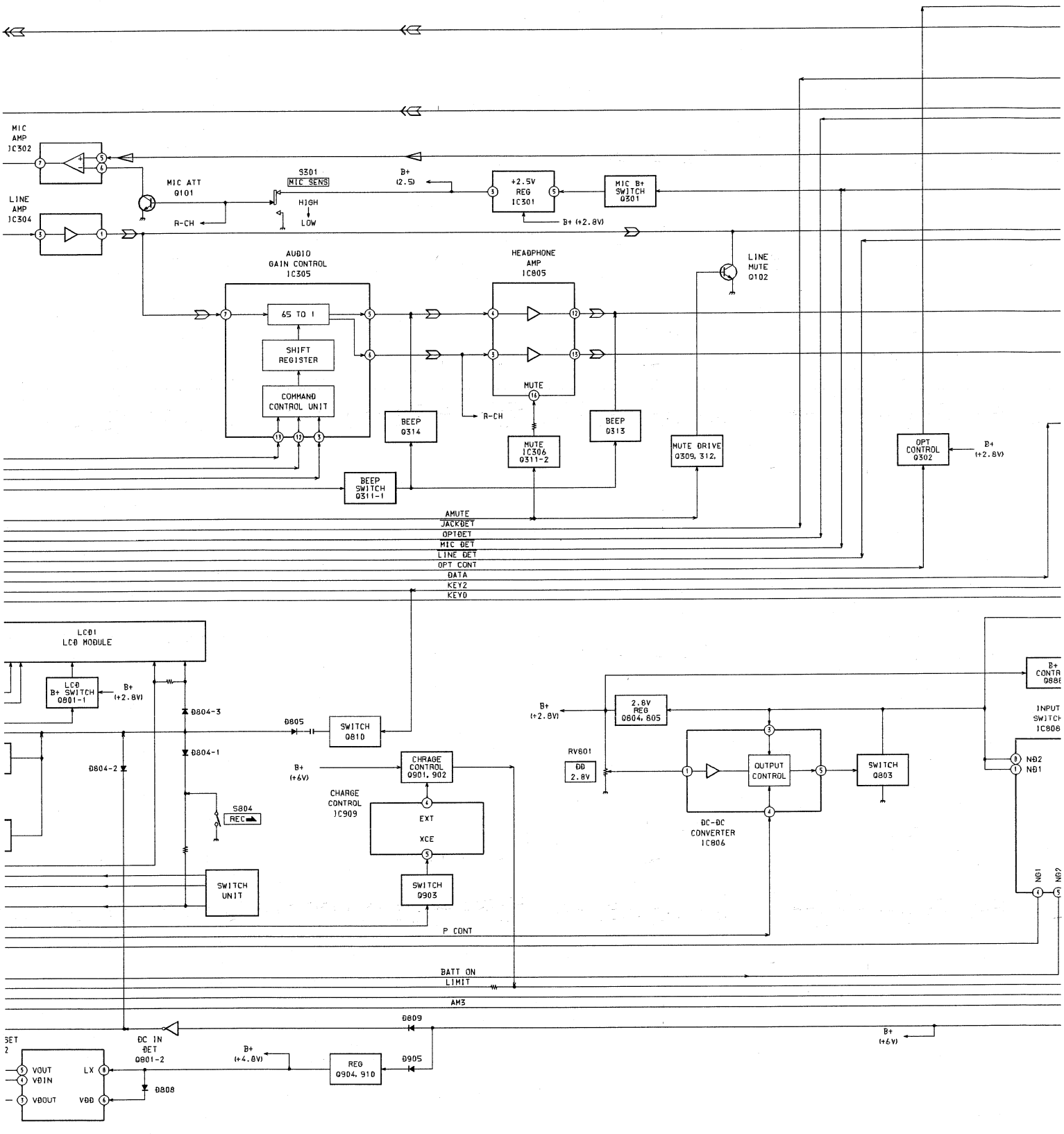
Pin No.	Pin name	I/O	Description
1	CLCS	O	Chip select output to real time clock (IC804).
2	XRST	O	Reset output. L : Reset
3	WRPWR	O	Laser power switching signal output.
4	TX	O	Write data transfer timing output.
5	SENSE	I	Internal status (SENSE) input.
6	LDON	O	Laser ON signal. H : ON
7	XSHOCK	I	Track jump detection input.
8	——	–	Not used (Open).
9	INLS	I	Detecting switch for internal circuit of sleding. Internal circuit : L
10	PROTECT	I	Disc write protect switch. H : Protect
11	DATA	O	Data output to remote control.
12	HOLD	I	Hold switch input (This unit). L : Hold
13	WP	I	Wake-up signal input from remote control key and this unit key.
14	OPEN	I	Detecting switch for opening and closing of the upper cover. Close : L
15	CLOCK	I	CLOCK SET switch input.
16	CLK SDIO	I	Serial clock input.
17	EVR DATA	I	Electric volume control data input.
18	PUSH JOG	I	Push JOG switch input.
19	LCD STB	O	LCD standby output.
20	CL SCK	O	Serial clock output for real time clock (IC804).
21	SDI2	I	Serial data input.
22	SYNC REC	I	SYNCHRO REC switch input.
23	D. B. B	I	DIGITAL MEGA BASS switch input.
24	XLINEDET	I	Line input detect. L : Line
25	AVLS	I	AVLS switch input. L : ON
26	XTEST	I	Test mode terminal. L : Test mode
27	XDCIN	I	DC input detect. L : DC IN
28	KANA SE L	–	Not used (Fixed at "H").
29	AM3 ON	O	This is at "H" level during external battery operation.
30	XP CONT	O	Power control output. L : ON
31	LIP ON	O	Outputs H while operating with a lithium battery.
32	XREC LED	O	REC LED control. L : ON
33	MODE2	O	Head drive (IC506) control signal output.
34	MODE1	O	
35	XRF STBY	O	Power control output to RF amplifier (IC501).
36	XLCD ON	O	LCD ON/OFF control. L : ON
37	MP	–	Microprocessor mode input (Fixed at "L").
38	XMRST	I	Microprocessor reset input.
39	Vss	–	Ground.
40	XTAL	–	System clock (12MHz).
41	EXTAL	–	System clock (12MHz).
42	CS	–	Chip Select input (Connected to +2.8V).
43	——	–	Not used (Fixed at "L").
44	LCD DATA	O	LCD data output.
45	LCD SCK	O	Serial clock output.
46	——	–	Not used (Open).
47	——	–	Not used (Open).
48	HIDCMNT	I	Voltage monitor DC input.
49	KEYR	I	Remote control key input.
50	AVss	–	Ground terminal for A/D converter.

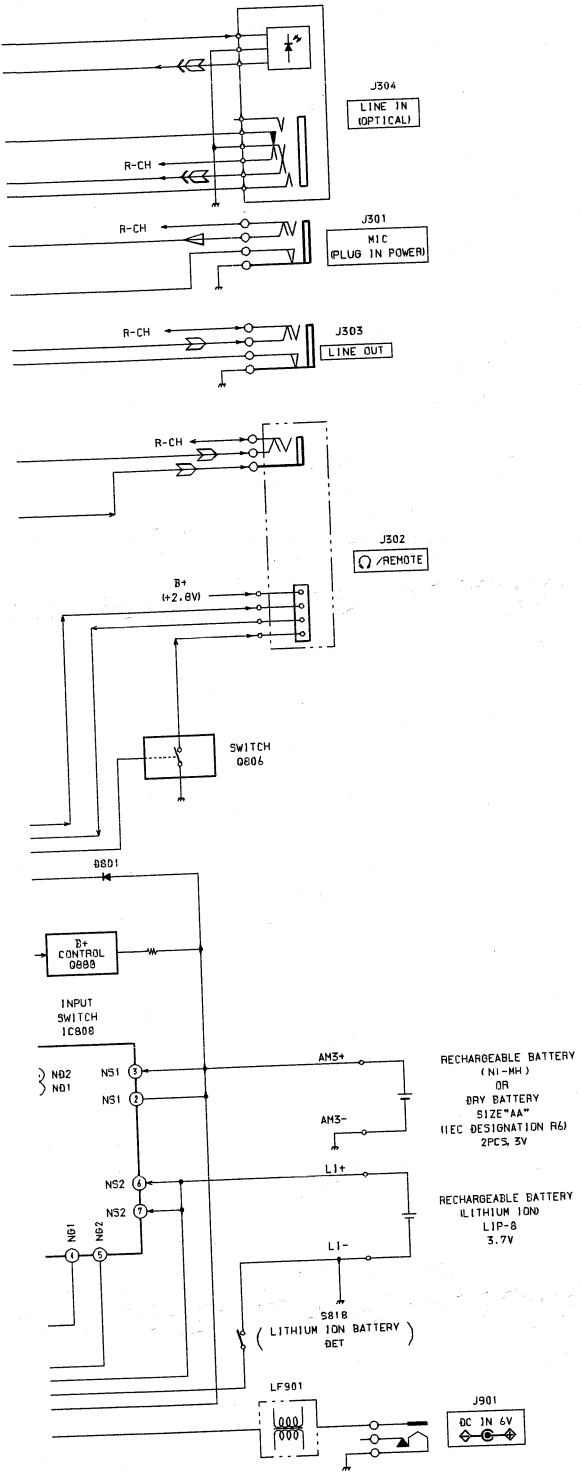
Pin No.	Pin name	I/O	Description
51	AVREF	I	A/D converter reference voltage input.
52	AVDD	–	A/D converter power supply terminal.
53	AM3 MNT	I	AC adaptor or EXT battery detection input. L : EXT battery
54	TEMP	I	Temp meter (IC803) input.
55	KEY3	I	PLAY/REC key input.
56	KEY4	I	Key input.
57	KEY0	I	Key input.
58	KEY1	I	Key input.
59	UNREG MNT	I	UNREG voltage monitor.
60	LIP MNT	I	Voltage monitor for lithium battery.
61	FG IN	I	FG input from motor driver (IC701).
62	SLA	I	JOG dial signal input.
63	SLB	I	
64	INT SW	I	INITIAL switch input.
65	PACK IN	I	MEDIA switch input.
66	JACKDET	I	Input jack detection input.
67	OPT DET	I	Detecting input an optical input.
68	MIC DET	I	MIC jack detection.
69	XLAT	O	Latch output.
70	KEY ON	O	TRACK MARK jack input.
71	ST1 A	O	Stepping motor control signal output.
72	ST2 A	O	
73	——	–	Not used (Open).
74	——	–	Not used (Open).
75	DQSY	I	Subcode Q sync (SCOR) of digital in U-bit CD format from IC503.
76	T COUNT	I	Traverse count signal input.
77	SDI1	I	Serial data input.
78	SDO1	O	Serial data output.
79	SCK1	O	Serial clock output.
80	SQSY	I	SUB-Q/ADIP SYNC input.
81	BEEP	O	BEEP sound output control. H : BEEP sound output
82	XLIP DET	I	This is at "L" level when using the lithium battery or with no sensor switch input.
83	REFLCT	I	CD/MO discrimination switch.
84	TEX	–	Not used (Fixed at "L")
85	XT	–	Not used (Open).
86	VSS	–	Ground.
87	VDD	–	Power supply pin (+2.8V).
88	NC	–	Not used (Fixed at "H")
89	XCS ADA	I	Chip select input.
90	XPD ADA	O	D/A converter power down detect during recording. H : Power down
91	ST1B	O	Stepping motor control signal output.
92	ST2B	O	
93	A MUTE	O	Analog mute control. L : Mute
94	OPT CONT	O	Power supply control output for an optical input.
95	CS EVR	O	Chip select output.
96	CS NV	O	
97	SCK2	O	Serial clock output.
98	———	O	HF module control output. (Not used : open)
99	SDO2	O	Serial data output.
100	XLIP	O	Charge control. H : Charge

6-2. BLOCK DIAGRAM

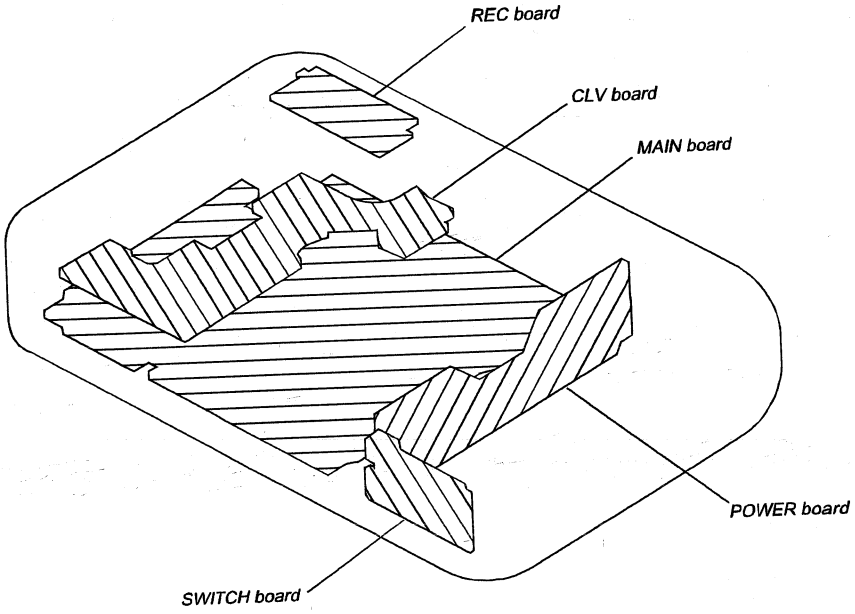



D IN
D0-D3
D0Q0-D04
16M
DRAM
IC509
XWE
XRAS
XCAS
XOE
A0-A9
A00-A08
DIGITAL SERVO
ATRAC
IC503
A/D, D/A
CONVERTER
IC303
ADC
MIC
AMP
IC302
LINE
AMP
IC304
DADT
ADDT
ALRCK
ABCK
FS256
AUDIO
I/F
CONTROLLER
DPGA
DBB
DAC
R-CH
CLOCK
DIVIDER
CONTROL REGISTER
I/F
XRST
PD
NV RAM
IC807
MNT0
MNT1
SWDT
SCLK
XLAT
SRDT
SENS
SQSY
DQSY
TX
WRPWR
SDO1
XSHOCK
TCOUNT
XPD ADA
XCS ADA
SCK2
SDI2
SDO2
CSNV
EVR DATA
CS EVR
BEEP
AMUTE
JACK DET
OPT DET
MIC DET
LINE DET
OPT CONT
DATA
KEYR
KEY ON
PULG ON:L
DATA OUT TO REMOTE
SLEEP:L, ON:H/
FADR
FFDR
SFDR
SADR
SPFD
XRST
SPRD
FGIN
OSCI
OSCO
X501
22.5MHz
X802
32KHz
REAL
TIME
CLOCK
IC804
CLSCK
CLKSDIO
CLCS
XRFSTBY
MODE2
MODE1
LDON
XREC LED
D803
REC
B+
(+2.8V)
LCD1
LCD MODU
LCD SCK
LCD DATA
LCD STB
XLCD ON
WP
LCD
B+ SWITCH
Q801-1
S704
(INITIAL)
S701
(MEDIA)
S705
(INLIMMIT)
S702
(PROTECT)
S703
(REFLECT)
INTSW
PACK IN
INLS
PROTECT
REFLCT
SYSTEM
CONTROL
IC801
KEY1
KEY0
EXTAL
XTAL
KEY2
X801
12MHz
S801
ERASE
S802
END SEARCH
S803
T MARK
WAKE-UP
Q811-1
WAKE-UP
Q811-2
JOG
(INPUT
DIAL)
SLB
SLA
B+(+6V)
HIDCMNT
KEY3
XLIP
XPCONT
AM3 ON
FG IN
(PUSH JOG)
PUSH-JOG
D-B-B
CLOCK
OPEN
TEST
S810
DIGITAL
MAGA BASS
S809
CLOCK SET
S823
OPEN
S817
DOOR
OPEN/CLOCE
(SHORT:TEST MODE
OPEN:NORMAL MODE)
ST1B
ST2B
HOLD
AVLS
SYNC REC
XRST
TEMP
XDCIN
BATT ON
LIMIT (LI+MNT)
X LIP DET
AM3
REG/RESET
IC802
TEMP
METER
IC803
B+
(+2.8V)
VOUT
VDIN
VDOUT
LX
VDD
ST1 SOU
ST2 SOU
S805
HOLD
S811
AVLS
LIMIT
NORM
S816
SYNCRHO REC
OFF
ON

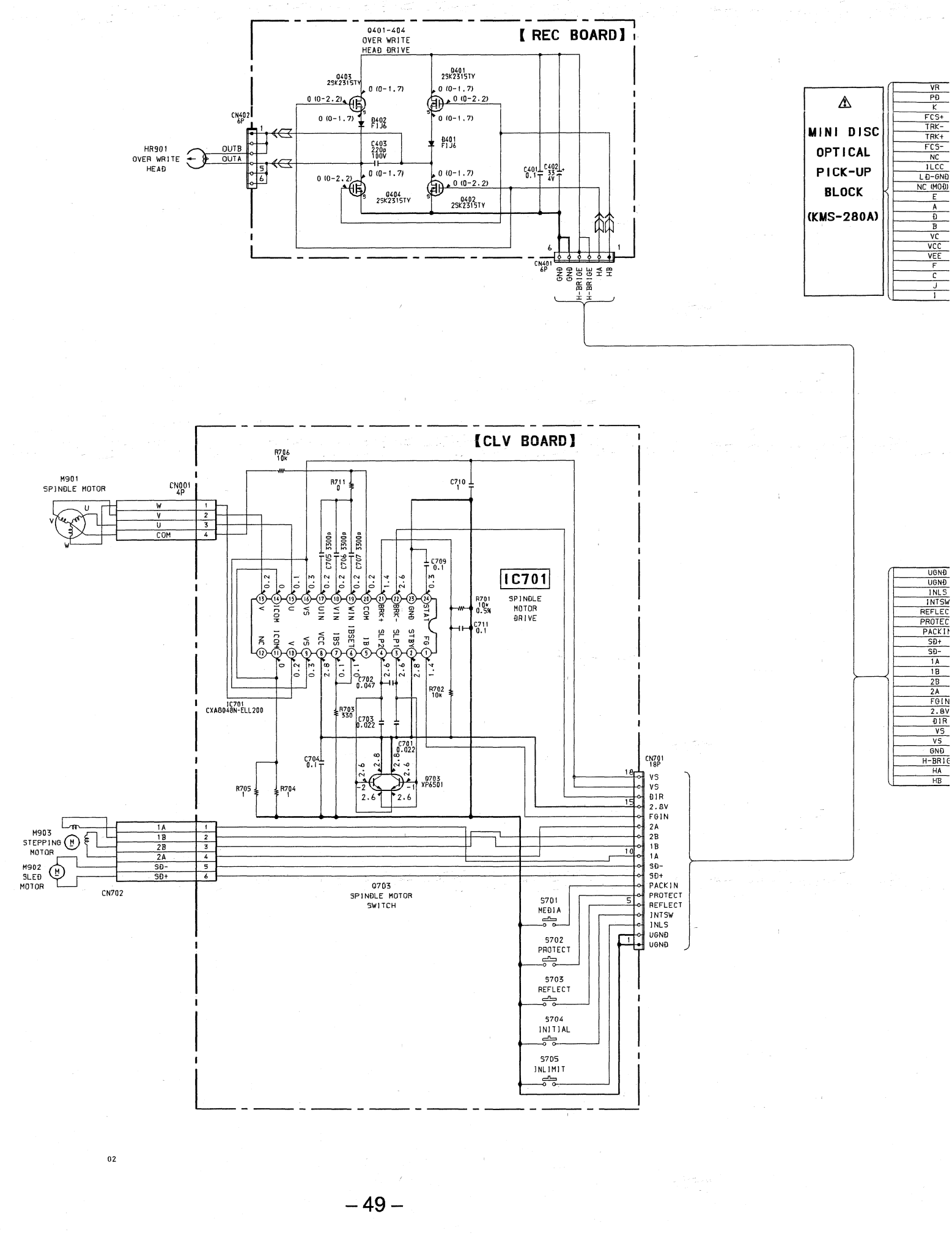

MIC AMP IC302
LINE AMP IC304
MIC ATT Q101
R-CH
S301
MIC SENS
HIGH
LOW
B+ (2.5)
+2.5V REG IC301
MIC B+ SWITCH Q301
B+ (+2.8V)
AUDIO GAIN CONTROL IC305
65 TO 1
SHIFT REGISTER
COMMAND CONTROL UNIT
HEADPHONE AMP IC805
MUTE
LINE MUTE Q102
BEEP Q314
BEEP Q313
R-CH
MUTE IC306 Q311-2
MUTE DRIVE Q309, 312,
BEEP SWITCH Q311-1
OPT CONTROL Q302
B+ (+2.8V)
AMUTE
JACKDET
OPTDET
MIC DET
LINE DET
OPT CONT
DATA
KEY2
KEY0
LCD1
LCD MODULE
LCD B+ SWITCH Q801-1
B+ (+2.8V)
D804-3
D804-1
D804-2
D805
SWITCH Q810
S804
REC
SWITCH UNIT
CHRAGE CONTROL Q901, 902
B+ (+6V)
CHARGE CONTROL IC909
EXT
XCE
SWITCH Q903
P CONT
BATT ON
LIMIT
AM3
D809
D808
DC IN DET Q801-2
B+ (+4.8V)
REG Q904, 910
D905
VOUT
VOIN
VBOUT
LX
VDD
B+ (+6V)
2.8V REG Q804, 805
B+ (+2.8V)
RV801
DD 2.8V
OUTPUT CONTROL
SWITCH Q803
DC-DC CONVERTER IC806
INPUT SWITCH IC808
ND2
ND1



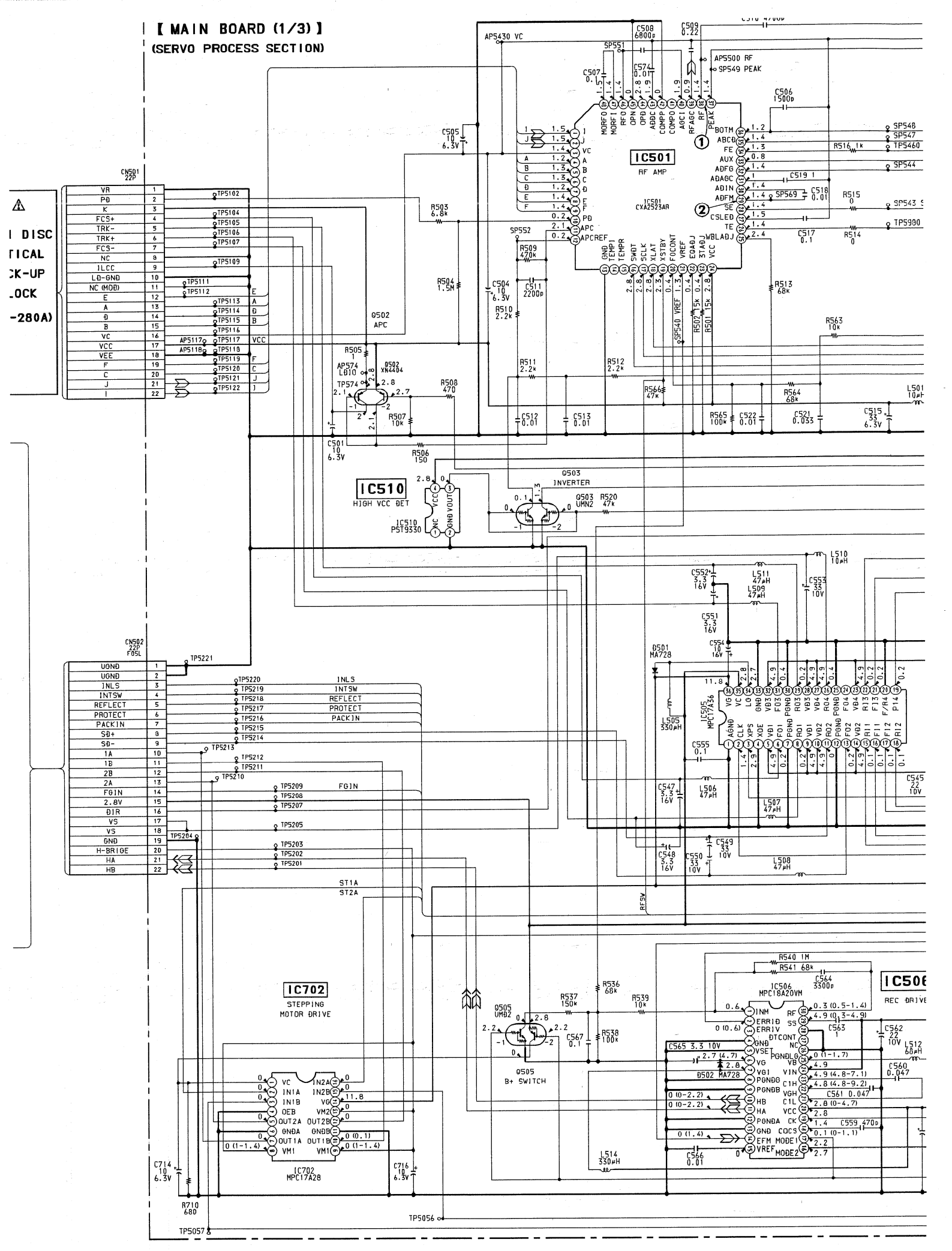
6-3. CIRCUIT BOARDS LOCATION

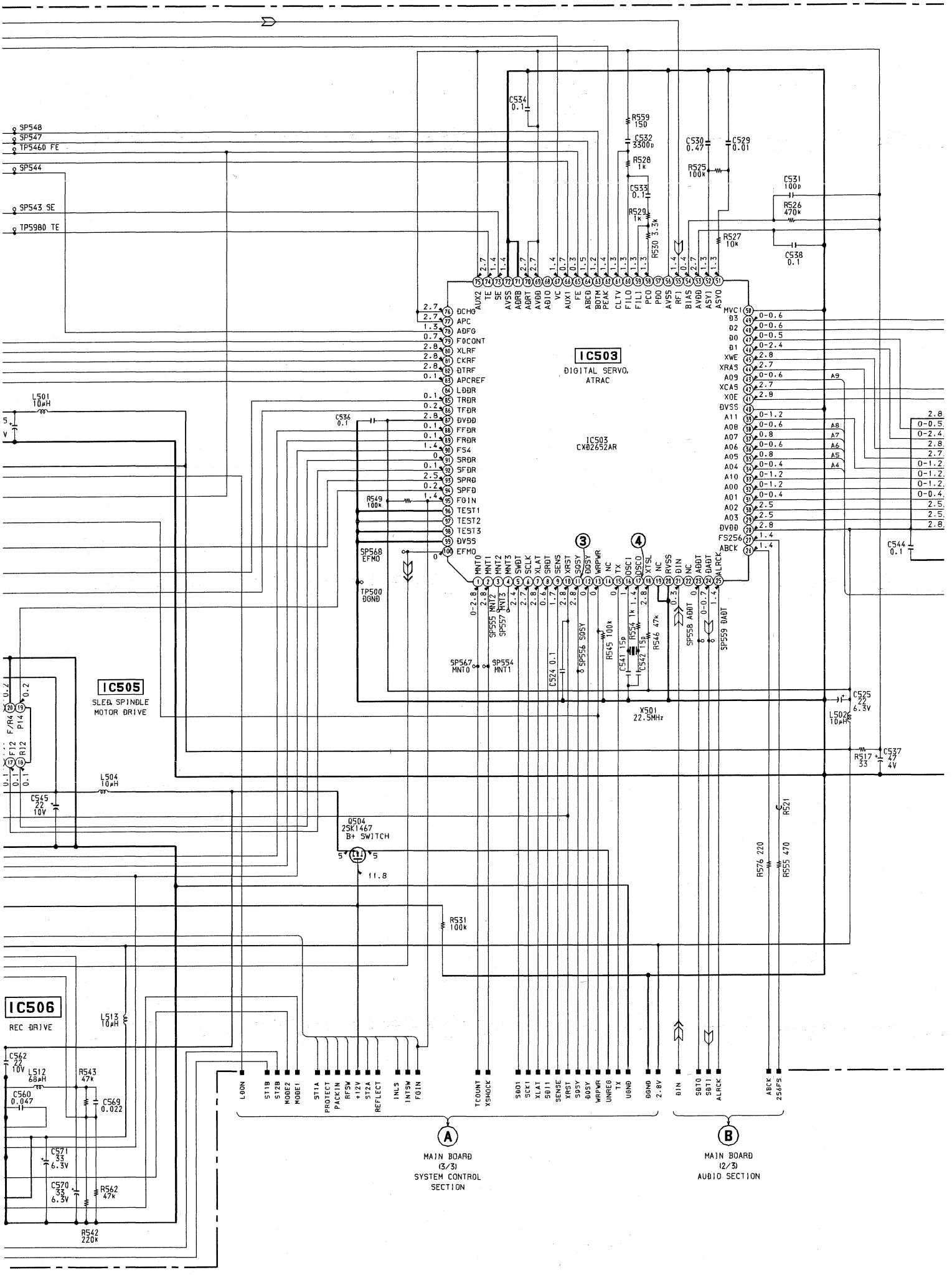


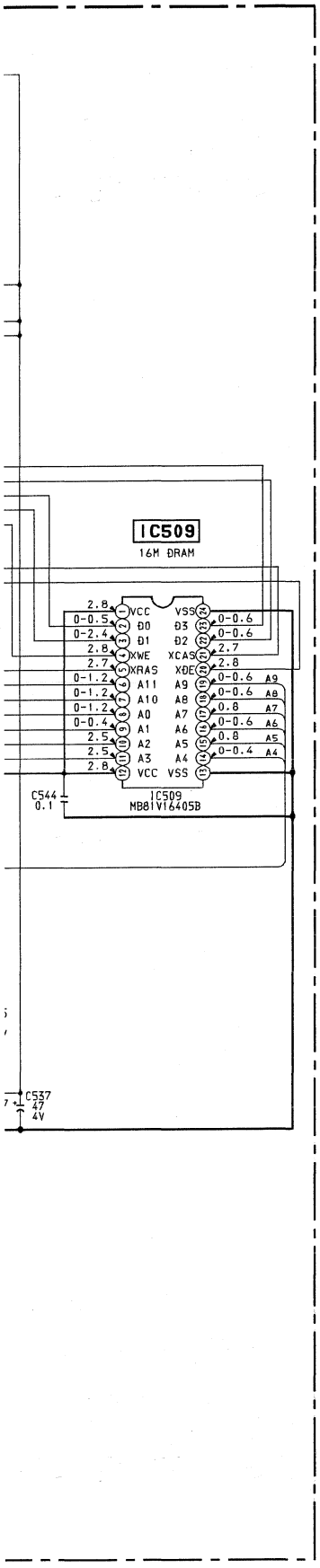
• Signal path.
: PB
: REC
: MIC

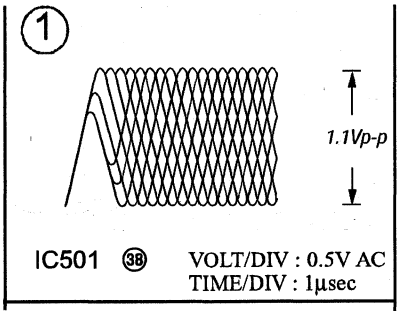

【REC BOARD】
0401-404
OVER WRITE
HEAD DRIVE
Q403
2SK2315TY
Q401
2SK2315TY
Q404
2SK2315TY
Q402
2SK2315TY
D402
F1J6
D401
F1J6
C403
220p
100V
C401
0.1
C402
33
4V
CN402
6P
HR901
OVER WRITE
HEAD
OUTB
OUTA
CN401
6P
GND
GND
H-BRIGE
H-BRIGE
HA
HB
MINI DISC
OPTICAL
PICK-UP
BLOCK
(KMS-280A)
VR
PD
K
FCS+
TRK-
TRK+
FCS-
NC
ILCC
LD-GND
NC (MOD)
E
A
D
B
VC
VCC
VEE
F
C
J
I
【CLV BOARD】
M901
SPINDLE MOTOR
CN001
4P
W
V
U
COM
R706
10k
R711
0
C710
1
C705
3300p
C706
3300p
C707
3300p
C709
0.1
IC701
SPINDLE
MOTOR
DRIVE
R701
10k
0.5W
C711
0.1
R702
10k
C702
0.047
R703
330
C703
0.022
C704
0.1
C701
0.022
R705
1
R704
1
Q703
XP6501
IC701
CXA8048N-ELL200
M903
STEPPING
MOTOR
M902
SLED
MOTOR
CN702
1A
1B
2B
2A
SD-
SD+
Q703
SPINDLE MOTOR
SWITCH
S701
MEDIA
S702
PROTECT
S703
REFLECT
S704
INITIAL
S705
INLIMIT
CN701
18P
VS
VS
DIR
2.8V
FGIN
2A
2B
1B
1A
SD-
SD+
PACKIN
PROTECT
REFLECT
INTSW
INLS
UGND
UGND
UGND
UGND
INLS
INTSW
REFLEC
PROTEC
PACKIN
SD+
SD-
1A
1B
2B
2A
FGIN
2.8V
DIR
VS
VS
GND
H-BRIG
HA
HB

02

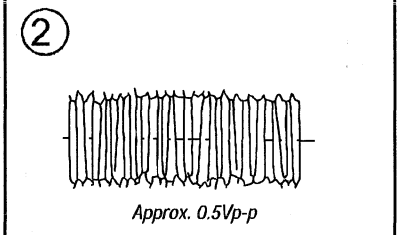

【 MAIN BOARD (1/3) 】
(SERVO PROCESS SECTION)
IC501
RF AMP
IC501
CXA2523AR
IC510
HIGH VCC DET
IC510
PST9330
Q502
APC
Q502
XN4404
Q503
INVERTER
Q503
UMN2
IC702
STEPPING
MOTOR DRIVE
IC702
MPC17A28
Q505
UMBZ
Q505
B+ SWITCH
IC506
MPC18A20VM
IC505
MPC17A36
D501
MA728
D502
MA728
CN501
22P
CN502
22P
FOSL
AP5430 VC
APC
APCREF
VCC
VEE
INLS
INTSW
REFLECT
PROTECT
PACKIN
FGIN
ST1A
ST2A
RFSW
TP5056
TP5057


IC503
DIGITAL SERVO, ATRAC
IC503
CXD2652AR
IC505
SLED, SPINDLE MOTOR DRIVE
IC506
REC DRIVE
X501
22.5MHz
Q504
2SK1467
B+ SWITCH
MAIN BOARD (3/3) SYSTEM CONTROL SECTION
MAIN BOARD (2/3) AUDIO SECTION

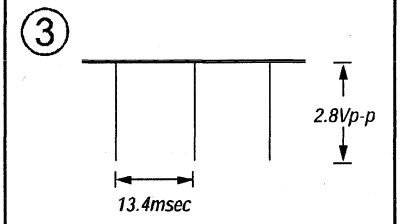




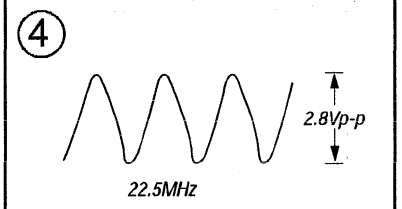
IC501 ㊳ VOLT/DIV : 0.5V AC
TIME/DIV : 1µsec



IC501 ㉙ VOLT/DIV : 0.1V AC
TIME/DIV : 1msec



IC503 ⑪ VOLT/DIV : 1V AC
TIME/DIV : 5msec



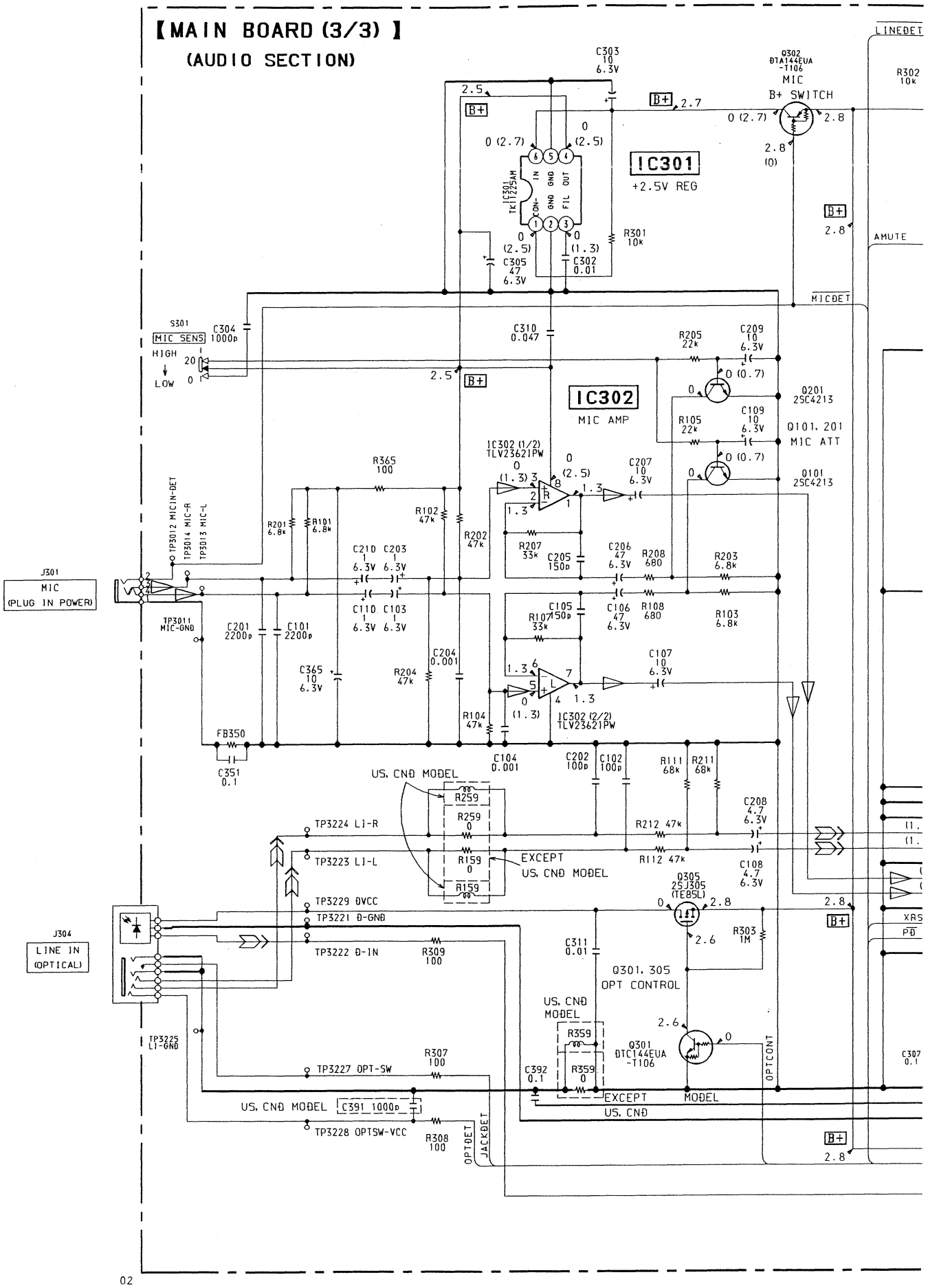
IC503 ⑰ VOLT/DIV : 1V AC
TIME/DIV : 20nsec

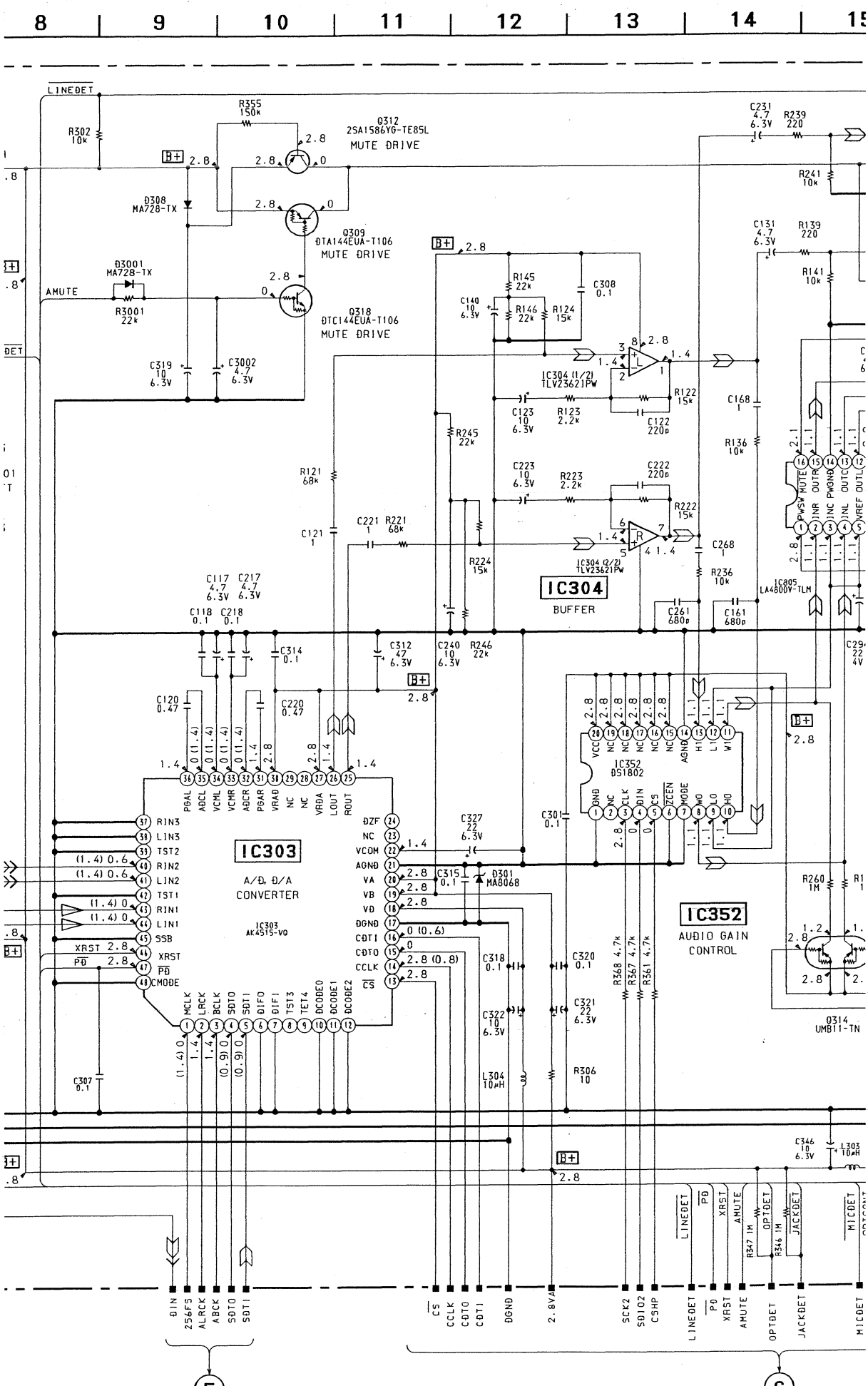
Note:

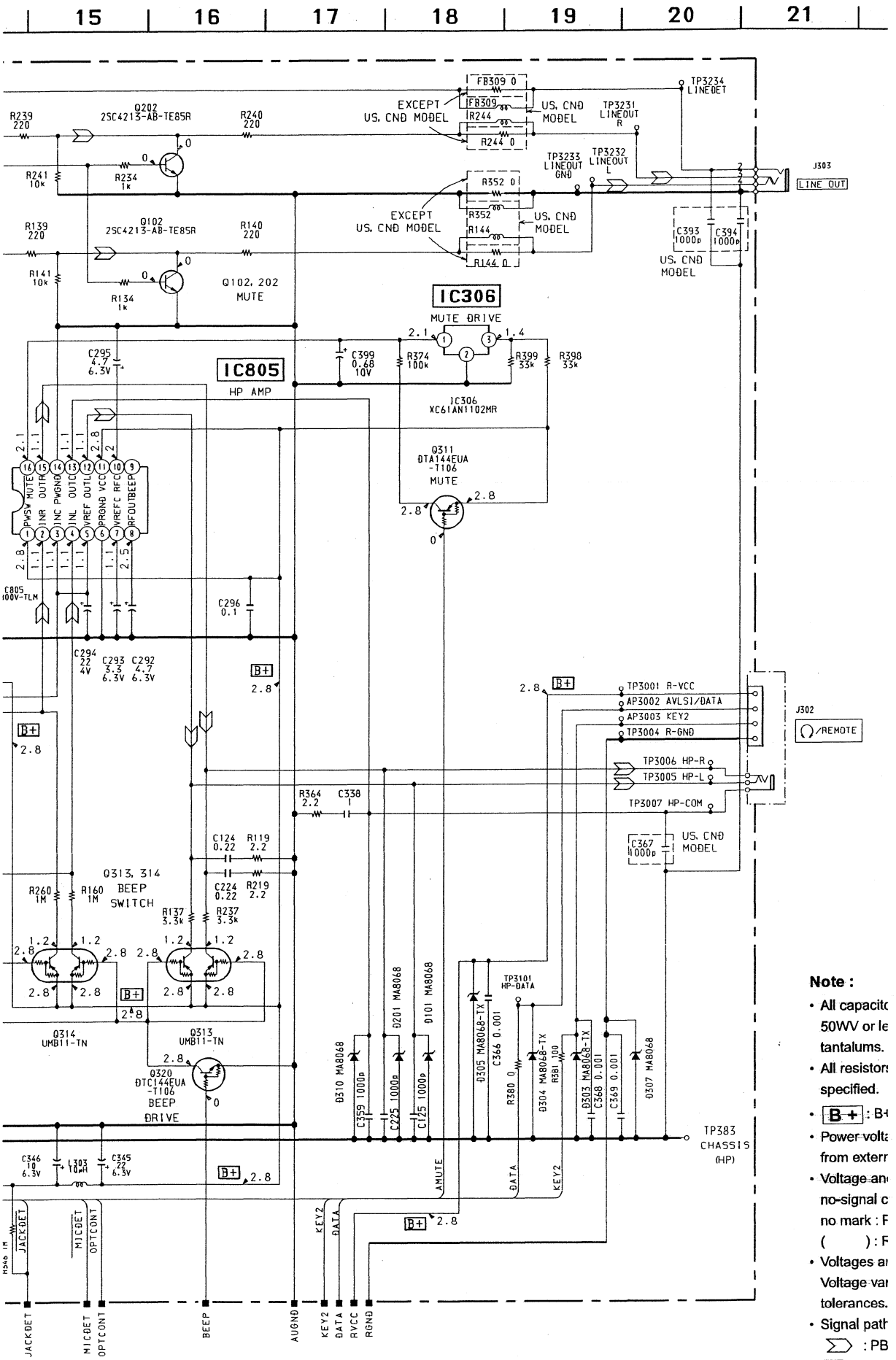
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

- ▬▬ : B+ Line.
- Power voltage is dc 6V and fed with regulated dc power supply from external power voltage jack (J901).
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : PB
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ▷ : PB
  ▷▷ : REC


【MAIN BOARD (3/3)】
(AUDIO SECTION)
IC301
+2.5V REG
IC302
MIC AMP
Q302 DTA144EUA -T106
MIC B+ SWITCH
Q201 2SC4213
MIC ATT
Q101 2SC4213
Q305 2SJ305 (TE85L)
Q301 DTC144EUA -T106
Q301, 305 OPT CONTROL
IC302 (1/2) TLV2362IPW
IC302 (2/2) TLV2362IPW
S301 MIC SENS HIGH LOW
J301 MIC (PLUG IN POWER)
J304 LINE IN (OPTICAL)
TP3012 MICIN-DET
TP3014 MIC-R
TP3013 MIC-L
TP3011 MIC-GND
TP3224 LI-R
TP3223 LI-L
TP3229 DVCC
TP3221 D-GND
TP3222 D-IN
TP3225 LI-GND
TP3227 OPT-SW
TP3228 OPTSW-VCC
US. CND MODEL
EXCEPT US. CND MODEL
EXCEPT US. CND
B+
LINEDET
MICDET
AMUTE
OPTCONT
OPTDET
JACKDET
02


8
9
10
11
12
13
14
IC303
A/D, D/A
CONVERTER
IC304
BUFFER
IC352
AUDIO GAIN
CONTROL
Q312
2SA1586YG-TE85L
MUTE DRIVE
Q309
DTA144EUA-T106
MUTE DRIVE
Q318
DTC144EUA-T106
MUTE DRIVE
D308
MA728-TX
D3001
MA728-TX
AMUTE
D301
MA8068
Q314
UMB11-TN
IC805
LA4800V-TLM
IC352
BS1802
IC304 (1/2)
TLV23621PW
IC304 (2/2)
TLV23621PW
IC303
AK4515-VQ
LINEDET
B+
2.8
DIN
256FS
ALRCK
ABCK
SDTO
SDTI
CS
CCLK
CDTO
CDTI
DGND
2.8VA
SCK2
SDIO2
CSHP
LINEDET
PD
XRST
AMUTE
OPTDET
JACKDET
MICDET
E
MAIN BOARD (Page 49)
(1/3)
SERVO PROCESS SECTION
C
MAIN BOARD (Page 5
(2/3)
SYSTEM CONTROL SECTION

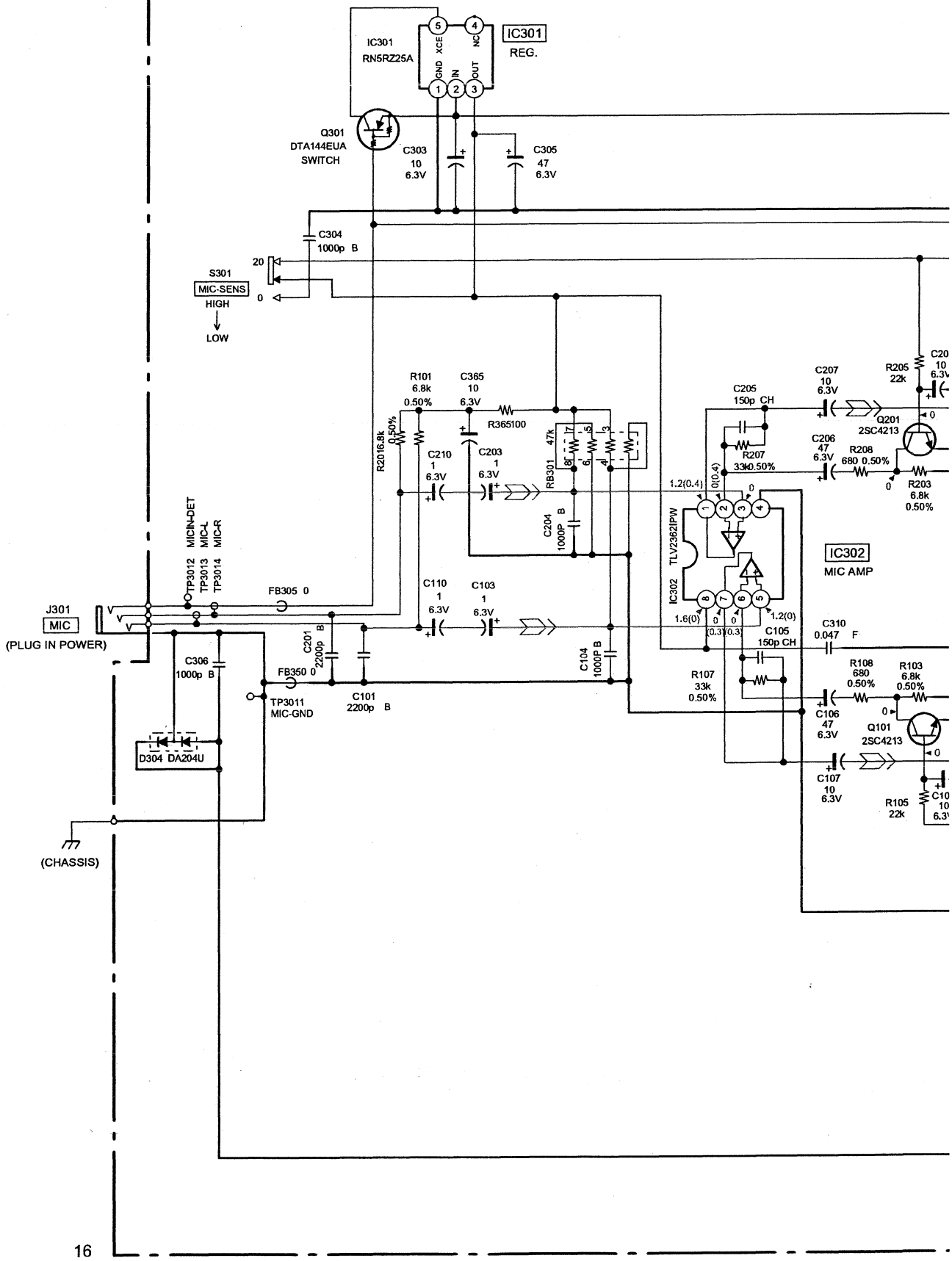


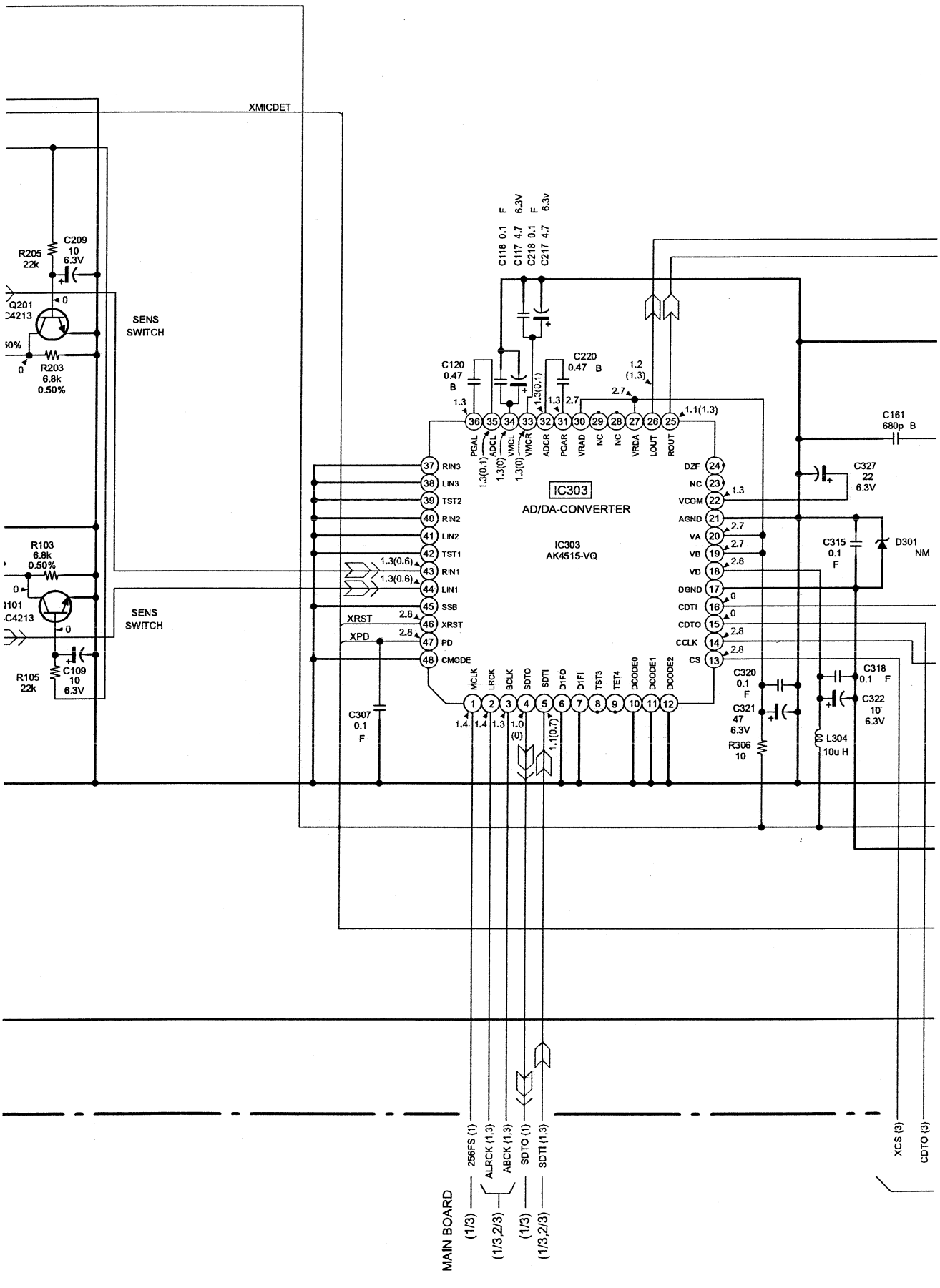
Note :

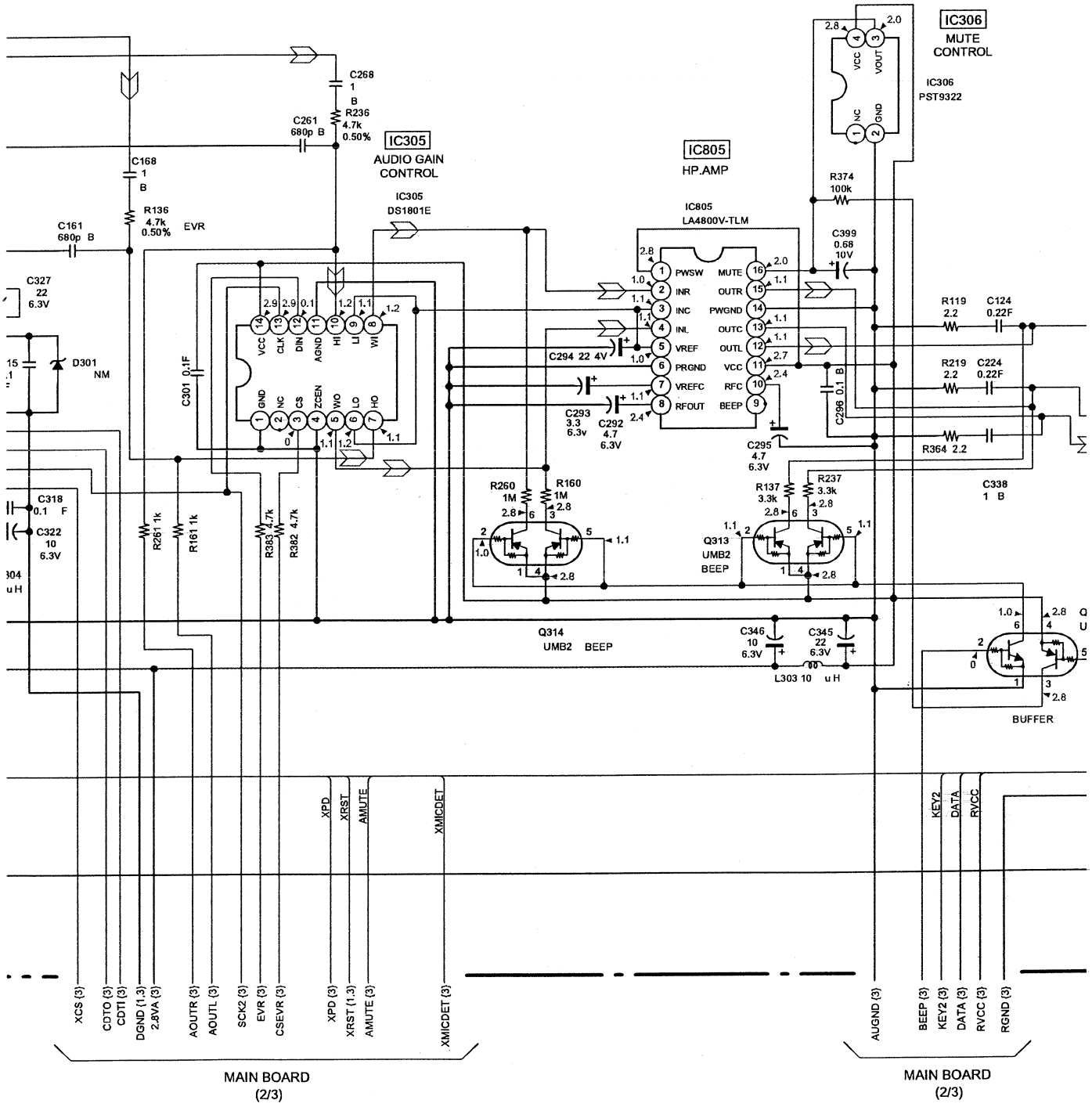
- All capacitc
  50WV or le
  tantalums.
- All resistor
  specified.
- B+ : B+
- Power volta
  from exterr
- Voltage an
  no-signal c
  no mark : F
  ( ) : F
- Voltages ar
  Voltage var
  tolerances.
- Signal path
  : PB
  : RE
  : MI
- Abbreviatic
  CND : C

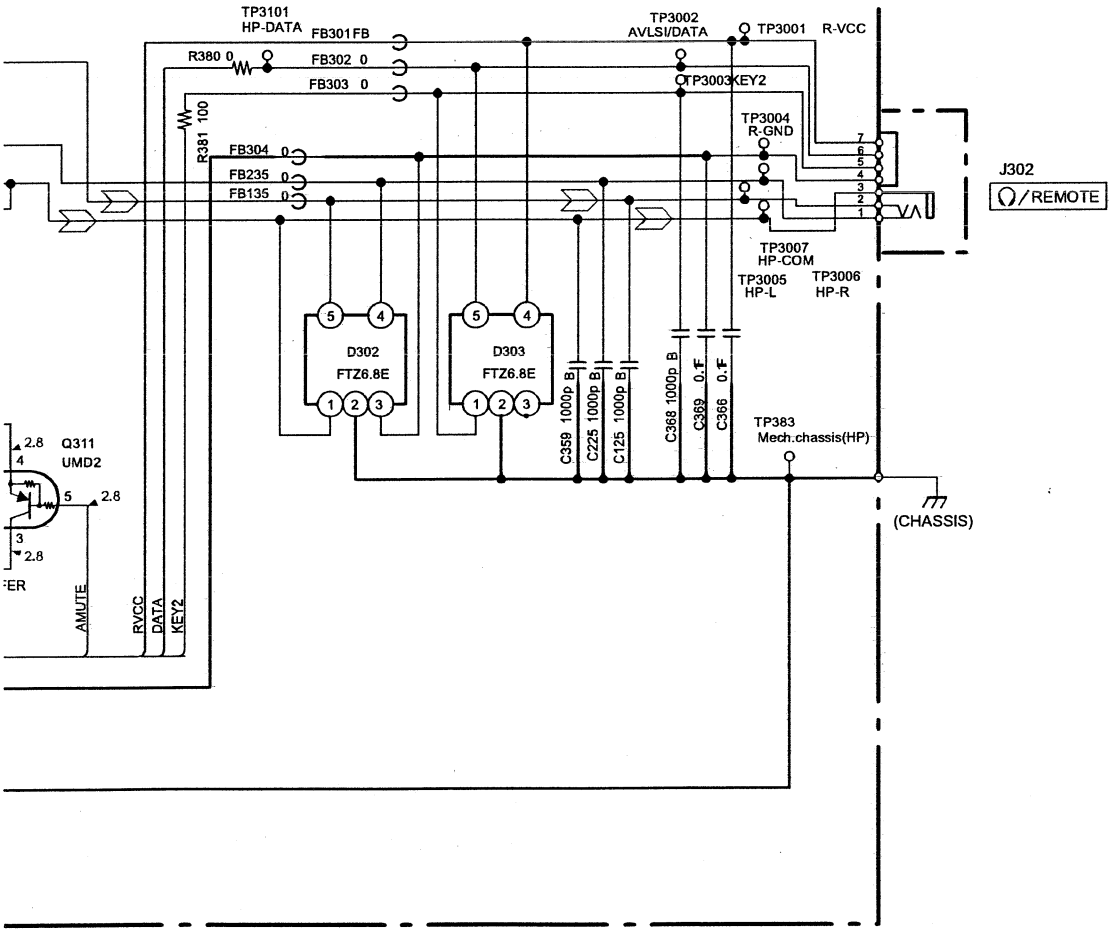
BOARD (Page 51)
/3)
ROL SECTION

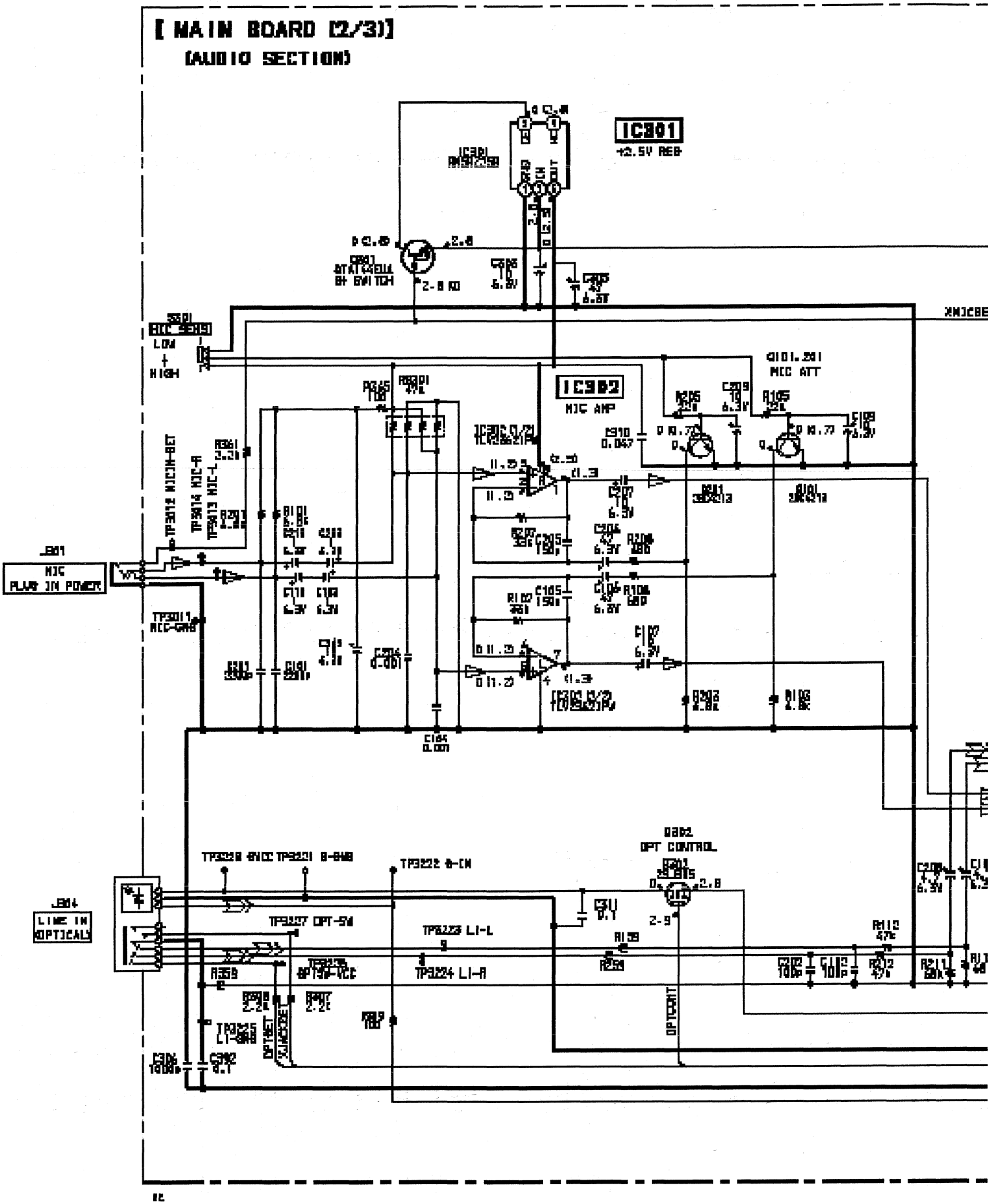
【MAIN BOARD】 (3/3)

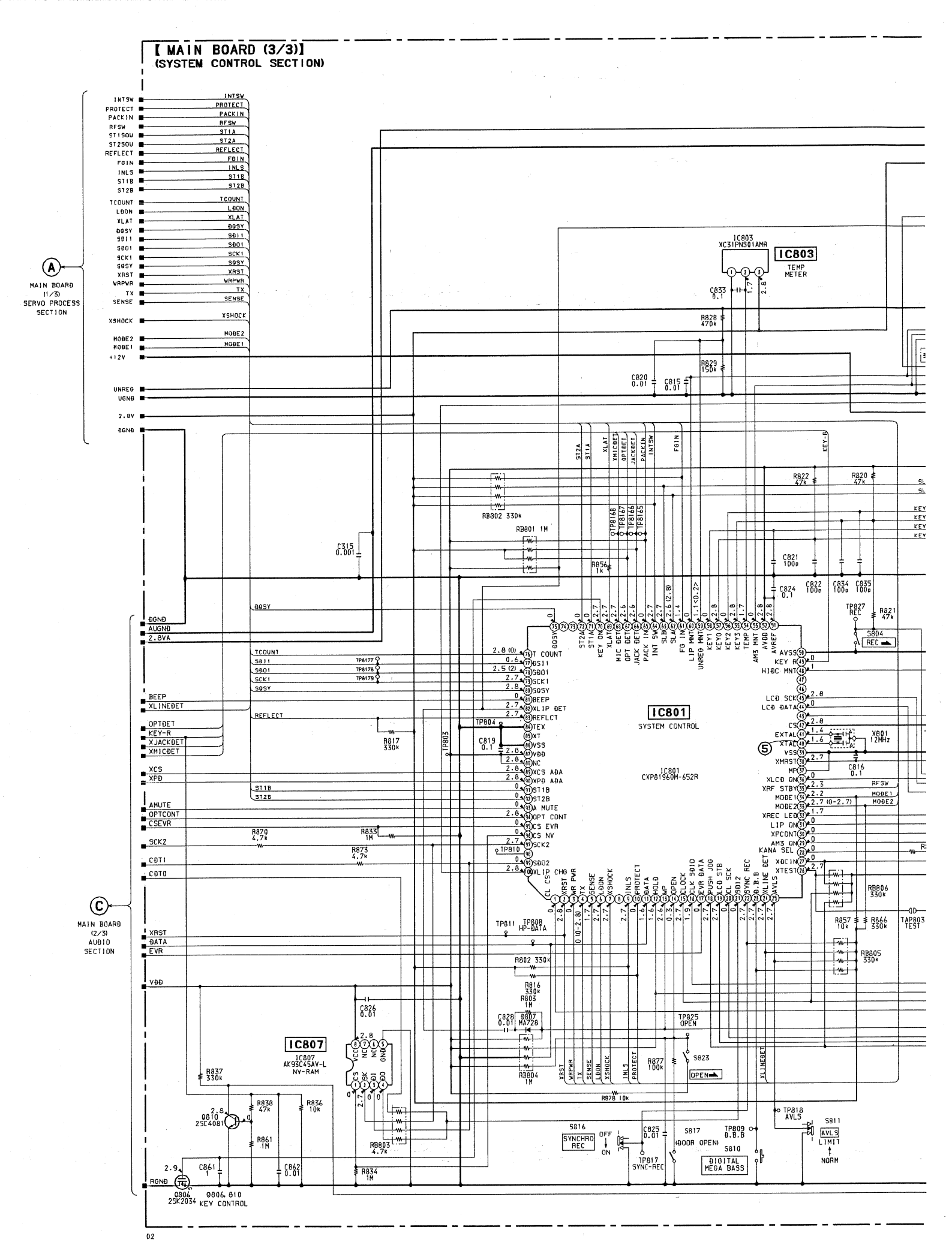


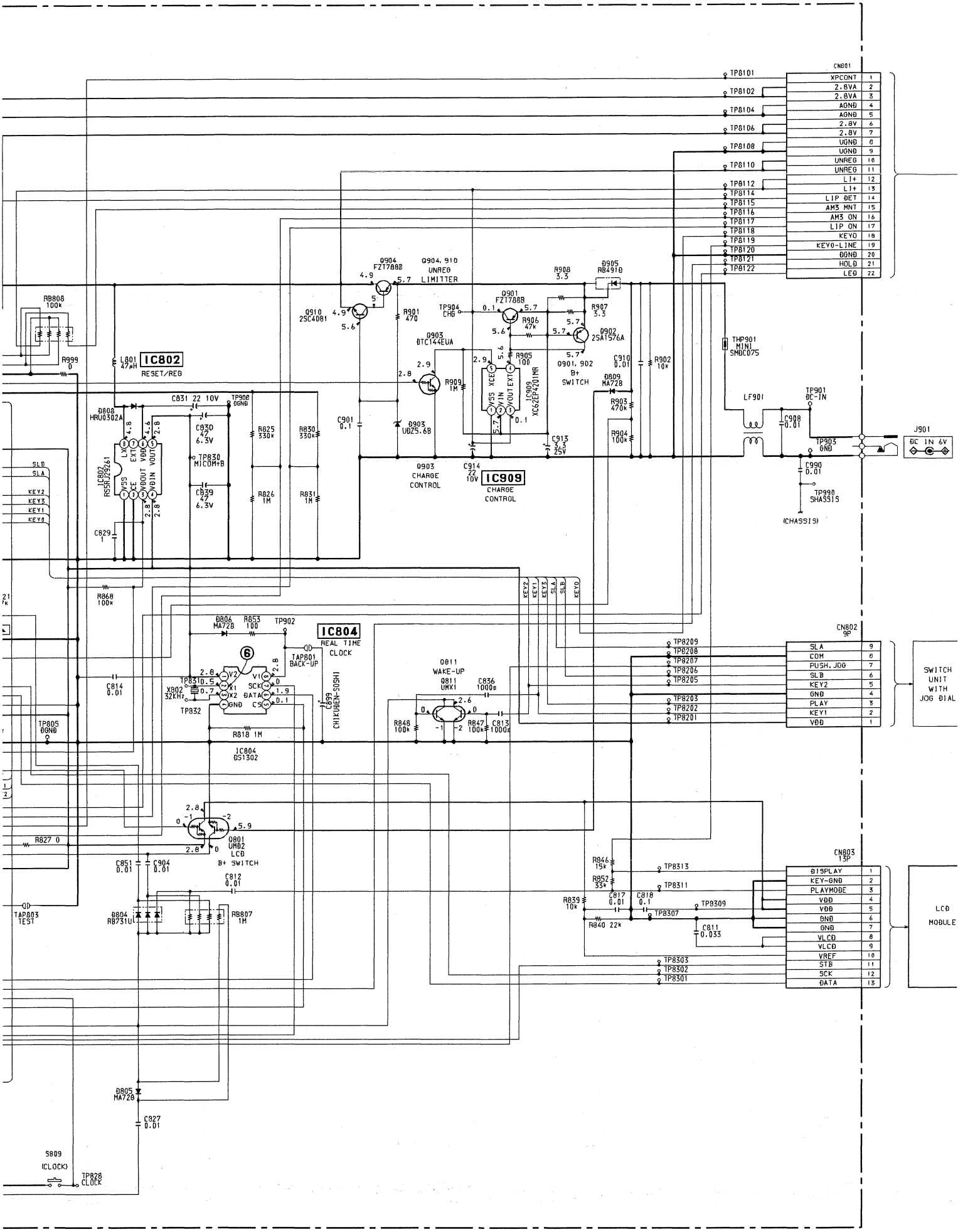

XMICDET
SENS SWITCH
SENS SWITCH
R205 22k
C209 10 6.3V
R203 6.8k 0.50%
R103 6.8k 0.50%
R105 22k
C109 10 6.3V
C118 0.1 F
C117 4.7 6.3V
C218 0.1 F
C217 4.7 6.3v
C120 0.47 B
C220 0.47 B
C161 680p B
C327 22 6.3V
C315 0.1 F
D301 NM
C318 0.1 F
C322 10 6.3V
L304 10u H
C320 0.1 F
C321 47 6.3V
R306 10
C307 0.1 F
IC303
AD/DA-CONVERTER
IC303
AK4515-VQ
PGAL
ADCL
VMCL
VMCR
ADCR
PGAR
VRAD
NC
NC
VRDA
LOUT
ROUT
RIN3
LIN3
TST2
RIN2
LIN2
TST1
RIN1
LIN1
SSB
XRST
PD
CMODE
DZF
NC
VCOM
AGND
VA
VB
VD
DGND
CDTI
CDTO
CCLK
CS
MCLK
LRCK
BCLK
SDTO
SDTI
D1FD
D1FI
TST3
TET4
DCODE0
DCODE1
DCODE2
MAIN BOARD
256FS (1)
(1/3)
ALRCK (1,3)
ABCK (1,3)
(1/3,2/3)
SDTO (1)
(1/3)
SDTI (1,3)
(1/3,2/3)
XCS (3)
CDTO (3)

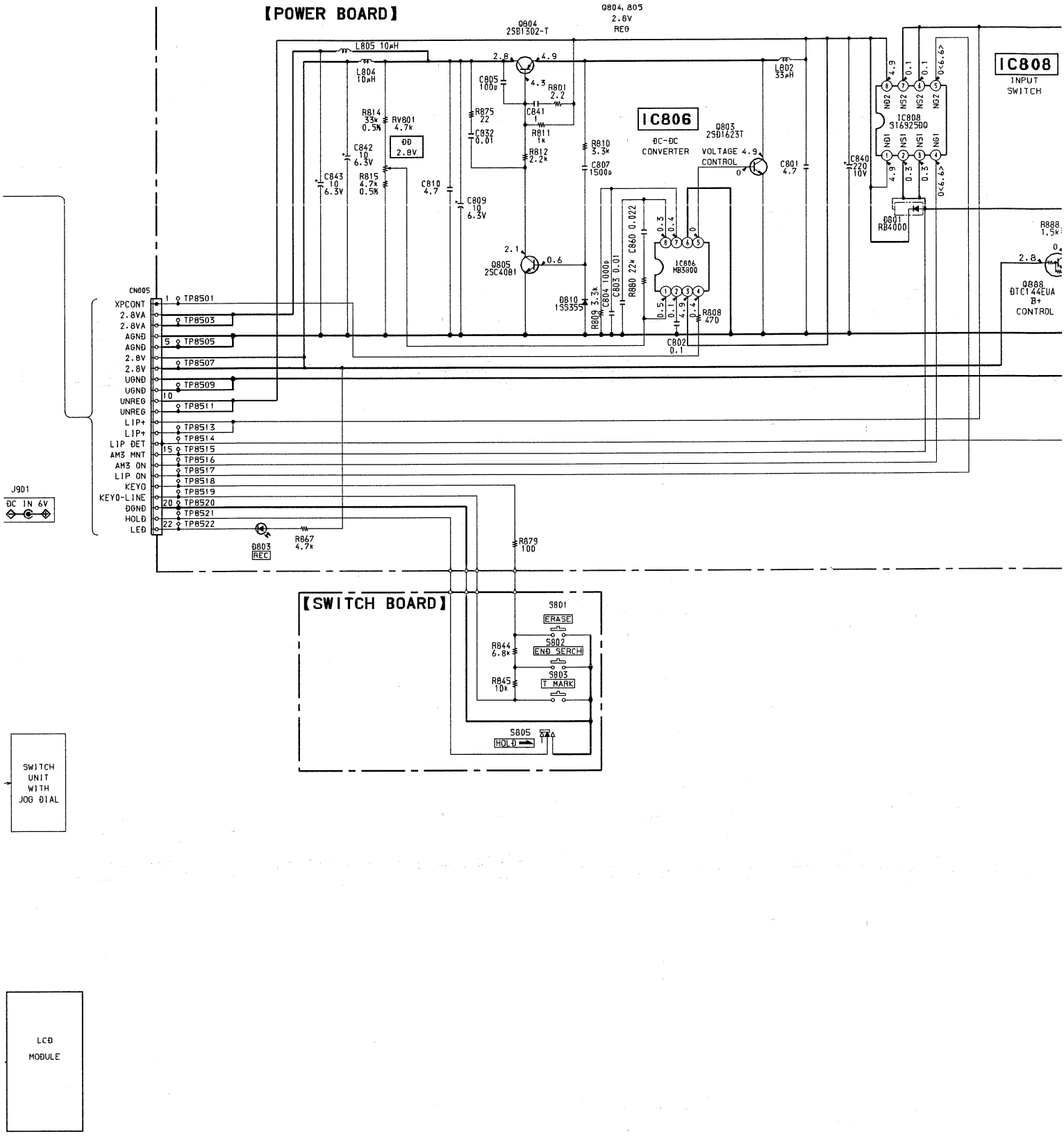

IC306
MUTE
CONTROL
IC306
PST9322
IC305
AUDIO GAIN
CONTROL
IC305
DS1801E
IC805
HP.AMP
IC805
LA4800V-TLM
C268
1
B
R236
4.7k
0.50%
C261
680p B
C168
1
B
R136
4.7k
0.50%
EVR
C161
680p B
C327
22
6.3V
D301
NM
C301 0.1F
R374
100k
C399
0.68
10V
R119
2.2
C124
0.22F
R219
2.2
C224
0.22F
R364 2.2
C296 0.1 B
C294 22 4V
C293
3.3
6.3v
C292
4.7
6.3V
C295
4.7
6.3V
C318
0.1 F
C322
10
6.3V
R261 1k
R161 1k
R383 4.7k
R382 4.7k
R260
1M
R160
1M
R137
3.3k
R237
3.3k
C338
1 B
Q313
UMB2
BEEP
Q314
UMB2 BEEP
C346
10
6.3V
C345
22
6.3V
L303 10 uH
BUFFER
XPD
XRST
AMUTE
XMICDET
KEY2
DATA
RVCC
XCS (3)
CDTO (3)
CDTI (3)
DGND (1.3)
2.8VA (3)
AOUTR (3)
AOUTL (3)
SCK2 (3)
EVR (3)
CSEVR (3)
XPD (3)
XRST (1.3)
AMUTE (3)
XMICDET (3)
AUGND (3)
BEEP (3)
KEY2 (3)
DATA (3)
RVCC (3)
RGND (3)
MAIN BOARD
(2/3)
MAIN BOARD
(2/3)

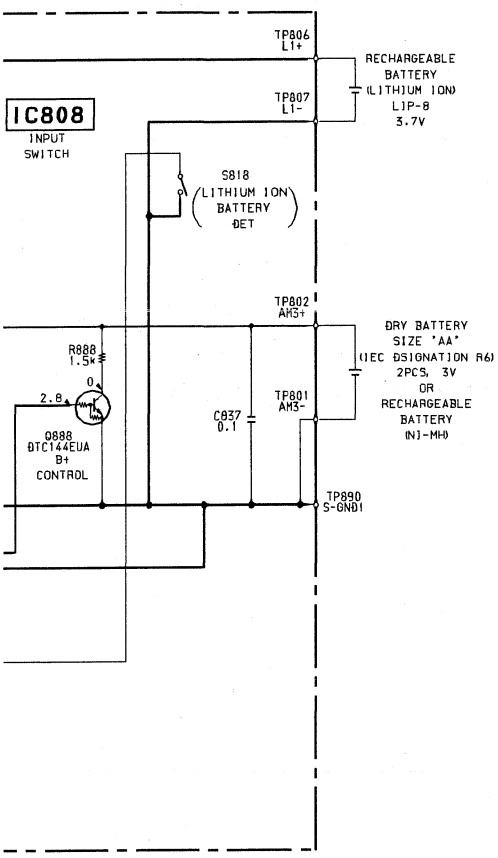

TP3101
HP-DATA
FB301FB
R380 0
FB302 0
FB303 0
R381 100
FB304 0
FB235 0
FB135 0
TP3002
AVLSI/DATA
TP3001 R-VCC
TP3003KEY2
TP3004
R-GND
J302
Ω/REMOTE
TP3007
HP-COM
TP3005
HP-L
TP3006
HP-R
D302
FTZ6.8E
D303
FTZ6.8E
C359 1000p B
C225 1000p B
C125 1000p B
C368 1000p B
C369 0.F
C366 0.F
TP383
Mech.chassis(HP)
(CHASSIS)
Q311
UMD2
2.8
AMUTE
RVCC
DATA
KEY2


[MAIN BOARD (2/3)]
(AUDIO SECTION)
IC301
+2.5V REG
IC302
MIC AMP
MIC
PLUG IN POWER
LINE IN
(OPTICAL)
OPT CONTROL
MIC ATT

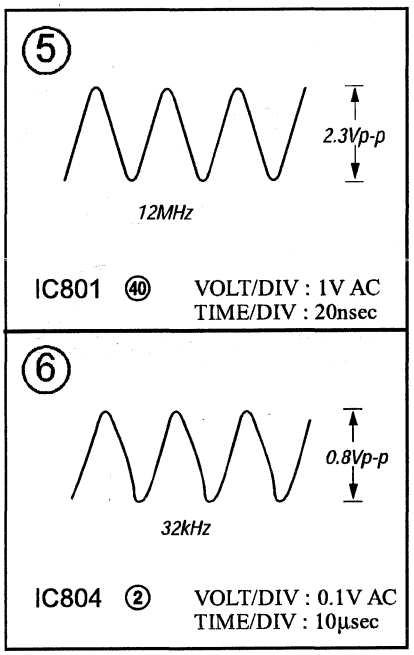

【MAIN BOARD (3/3)】
(SYSTEM CONTROL SECTION)
MAIN BOARD (1/3) SERVO PROCESS SECTION
MAIN BOARD (2/3) AUDIO SECTION
IC801
SYSTEM CONTROL
IC801 CXP81960M-652R
IC803 XC31PN501AMR
TEMP METER
IC807 AK93C45AV-L NV-RAM
Q806 2SK2034
Q806, 810 KEY CONTROL
Q810 2SC4081
SYNCHRO REC
DIGITAL MEGA BASS
(DOOR OPEN)
AVLS LIMIT
NORM
SYNC-REC
OPEN
REC
X801 12MHz
02


CN801
XPCONT 1
2.8VA 2
2.8VA 3
AGND 4
AGND 5
2.8V 6
2.8V 7
UGND 8
UGND 9
UNREG 10
UNREG 11
LI+ 12
LI+ 13
LIP DET 14
AM3 MNT 15
AM3 ON 16
LIP ON 17
KEY0 18
KEY0-LINE 19
DGND 20
HOLD 21
LED 22
TP8101
TP8102
TP8104
TP8106
TP8108
TP8110
TP8112
TP8114
TP8115
TP8116
TP8117
TP8118
TP8119
TP8120
TP8121
TP8122
IC802
RESET/REG
IC804
REAL TIME CLOCK
IC909
CHARGE CONTROL
Q904 FZ1788B
Q904, 910 UNREG LIMITTER
Q905 RB491D
Q901 FZ1788B
Q910 2SC4081
Q903 DTC144EUA
Q902 2SA1576A
Q901, 902 B+ SWITCH
Q811 WAKE-UP UMX1
Q801 UM02 LCD B+ SWITCH
D808 HRU0302A
D806 MA728
D809 MA728
D805 MA728
D903 UDZ5.6B
IC802 RS5RJ2926I
IC804 DS1302
IC909 XC62EP4201MR
X802 32KHz
TP830 MICOM+B
TP832
TP902
TP901 DC-IN
TP903 GND
TP905 DGND
TP990 SHASSIS
(CHASSIS)
THP901 MINI SMDC075
LF901
J901
DC IN 6V
CN802 9P
SLA 9
COM 8
PUSH, JOG 7
SLB 6
KEY2 5
GND 4
PLAY 3
KEY1 2
VDD 1
TP8209
TP8208
TP8207
TP8206
TP8205
TP8203
TP8202
TP8201
SWITCH UNIT WITH JOG DIAL
CN803 13P
DISPLAY 1
KEY-GND 2
PLAYMODE 3
VDD 4
VDD 5
GND 6
GND 7
VLCD 8
VLCD 9
VREF 10
STB 11
SCK 12
DATA 13
TP8313
TP8311
TP8309
TP8307
TP8303
TP8302
TP8301
LCD MODULE
S809 (CLOCK)
TP828 CLOCK
TAP803 TEST
TAP801 BACK-UP
CH1KUBEN-505H1
RB808 100k
RB807 1M
RB804 RB731U
L801 47μH
R999 0
R868 100k
R827 0
R818 1M
R901 470
R907 3.3
R908 3.3
R906 47k
R909 1M
R905 100
R903 470k
R904 100k
R902 10k
R825 330k
R830 330k
R826 1M
R831 1M
R853 100
R848 100k
R847 100k
R846 15k
R852 33k
R839 10k
R840 22k
C831 22 10V
C830 47 6.3V
C839 47 6.3V
C829 1
C901 0.1
C910 0.01
C913 22 25V
C914 22 10V
C908 0.01
C990 0.01
C814 0.01
C851 0.01
C904 0.01
C812 0.01
C827 0.01
C836 1000p
C813 1000p
C817 0.01
C818 0.1
C811 0.033
C899


【POWER BOARD】
Q804, 805
2.8V
REG
Q804
2SB1302-T
L805 10μH
L804
10μH
C805
100p
R801
2.2
C841
1
R811
1k
R812
2.2k
R875
22
C832
0.01
R814
33k
0.5%
RV801
4.7k
C842
10
6.3V
C843
10
6.3V
R815
4.7k
0.5%
C810
4.7
C809
10
6.3V
R810
3.3k
C807
1500p
IC806
DC-DC
CONVERTER
Q803
2SD1623T
VOLTAGE 4.9
CONTROL
C801
4.7
L802
33μH
IC808
INPUT
SWITCH
IC808
S1692500
C840
220
10V
D801
RB4000
R888
1.5k
Q888
DTC144EUA
B+
CONTROL
Q805
2SC4081
D810
1SS355
R809
3.3k
C804
1000p
C803
0.01
C860
0.022
R880
22k
IC806
MB3800
R808
470
C802
0.1
CN605
XPCONT
2.8VA
2.8VA
AGND
AGND
2.8V
2.8V
UGND
UGND
UNREG
UNREG
LIP+
LIP+
LIP DET
AM3 MNT
AM3 ON
LIP ON
KEYO
KEYO-LINE
DGND
HOLD
LED
TP8501
TP8503
TP8505
TP8507
TP8509
TP8511
TP8513
TP8514
TP8515
TP8516
TP8517
TP8518
TP8519
TP8520
TP8521
TP8522
J901
DC IN 6V
D803
REC
R867
4.7k
R879
100
【SWITCH BOARD】
S801
ERASE
S802
END SERCH
S803
T MARK
S805
HOLD
R844
6.8k
R845
10k
SWITCH
UNIT
WITH
JOG DIAL
LCD
MODULE



●WAVEFORMS

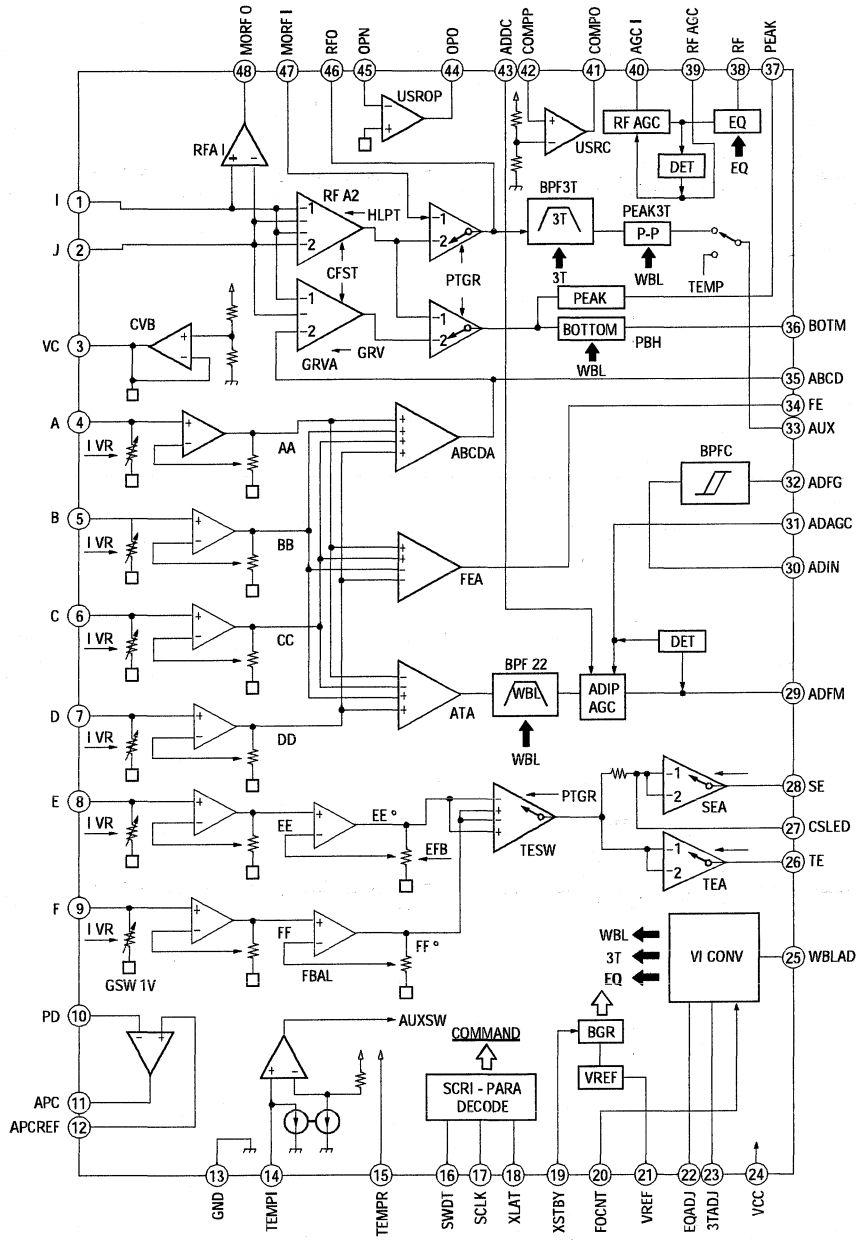


Note:

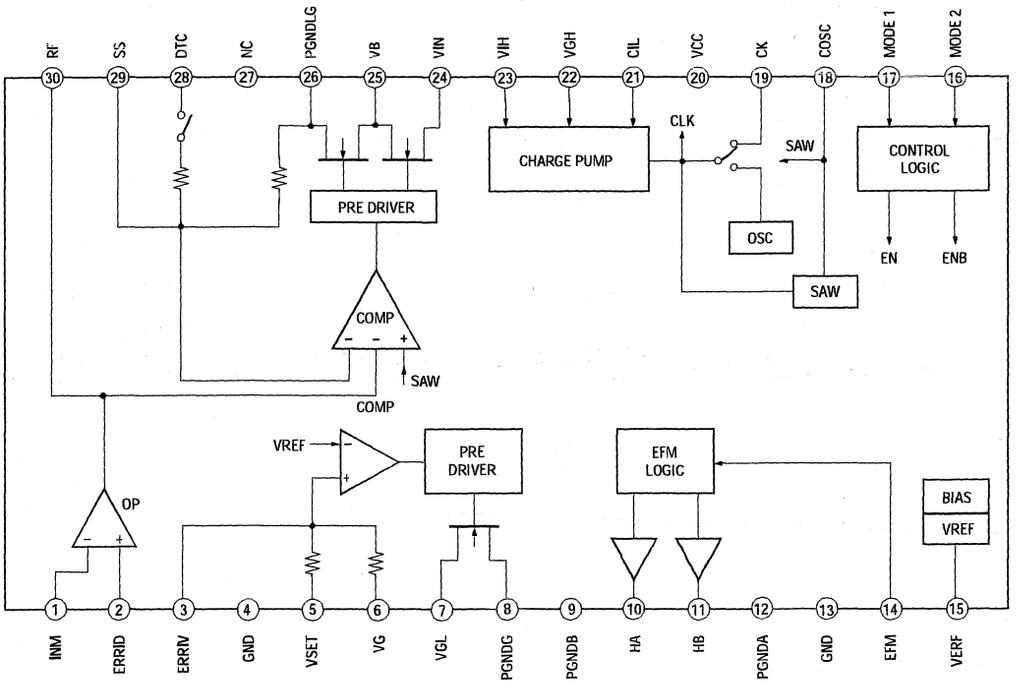
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▬▬ : B+ Line.
- ▭ : panel designation.
- Power voltage is dc 6V and fed with regulated dc power supply from external power voltage jack (J901).
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

● IC BLOCK DIAGRAMS – MAIN (1/3) SECTION –

IC501 CXA2523AR-T4

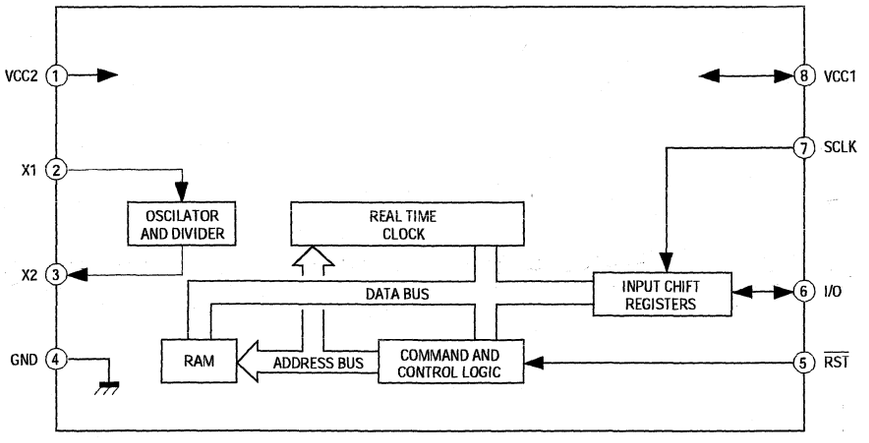


IC506 MPC18A20VM

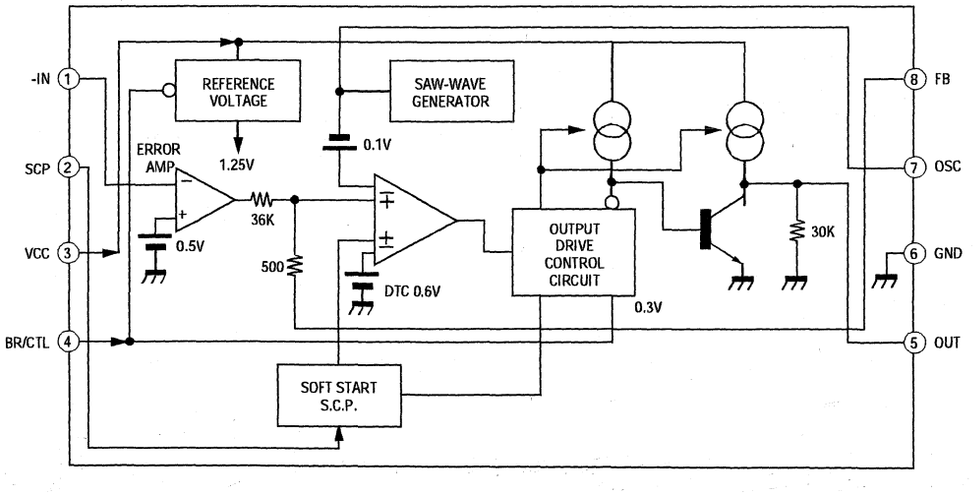


● IC BLOCK DIAGRAMS – MAIN (2/3) SECTION –

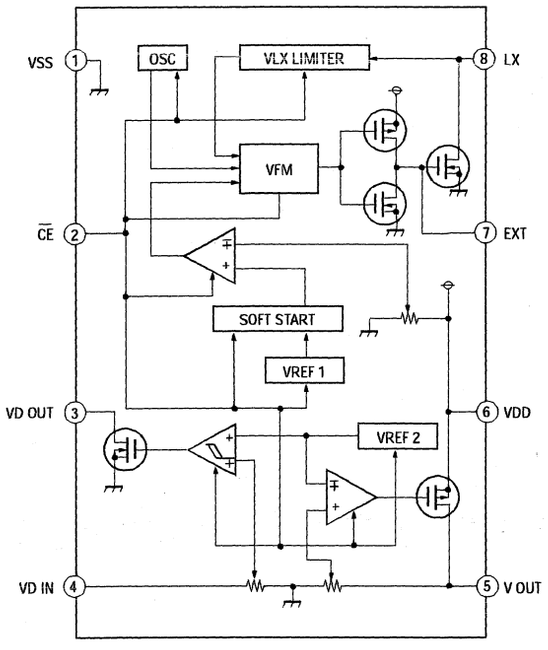
IC804 DS1302Z



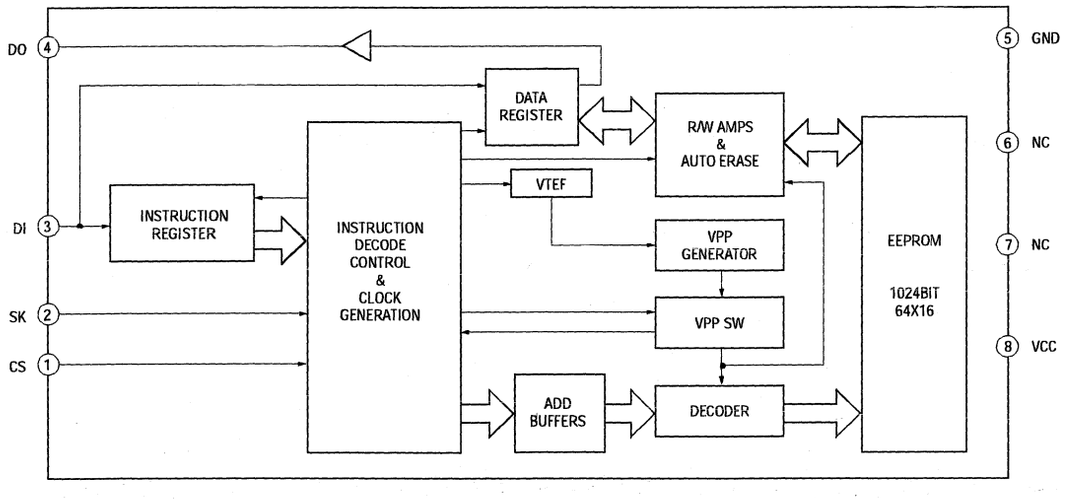
IC806 MB3800PNF



IC802 RS5RJ29261

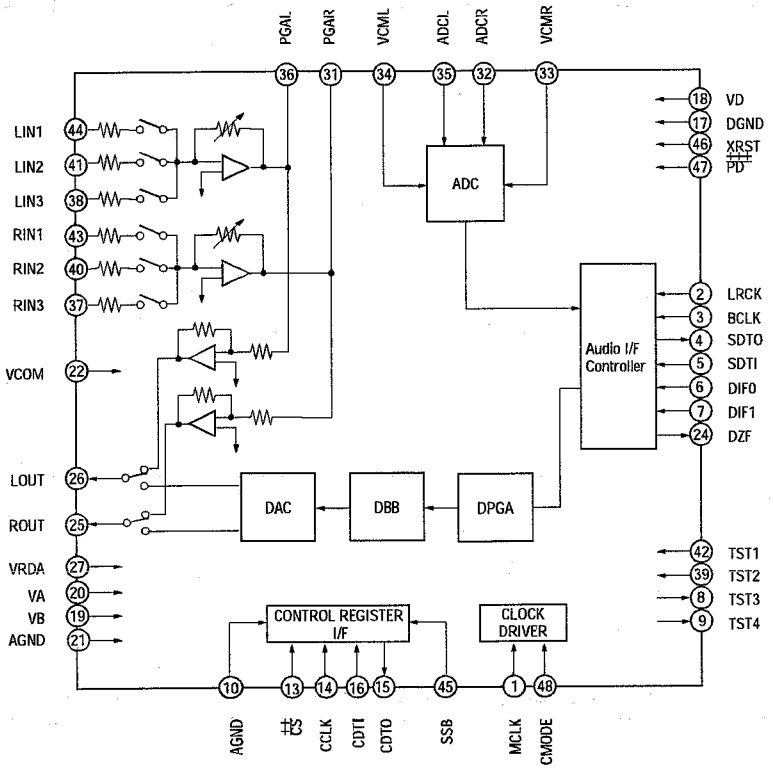


IC807 AK93C45AV-L



● IC BLOCK DIAGRAM – MAIN (3/3) SECTION –

IC303 AK4515-VQ



SECTION 7
EXPLODED VIEWS

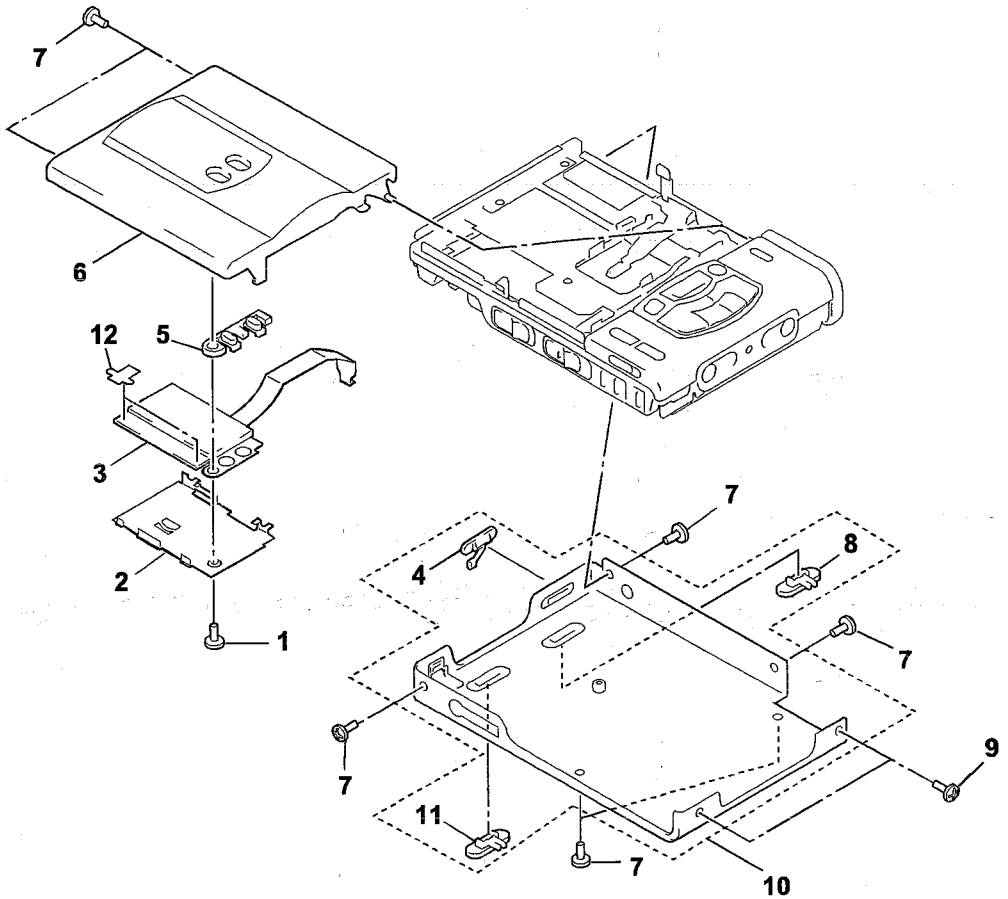
NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ··· (RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of this parts list.
- Abbreviation
  AUS : Australian
  HK : Hong Kong
  JEW : Tourist
  FR : French

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

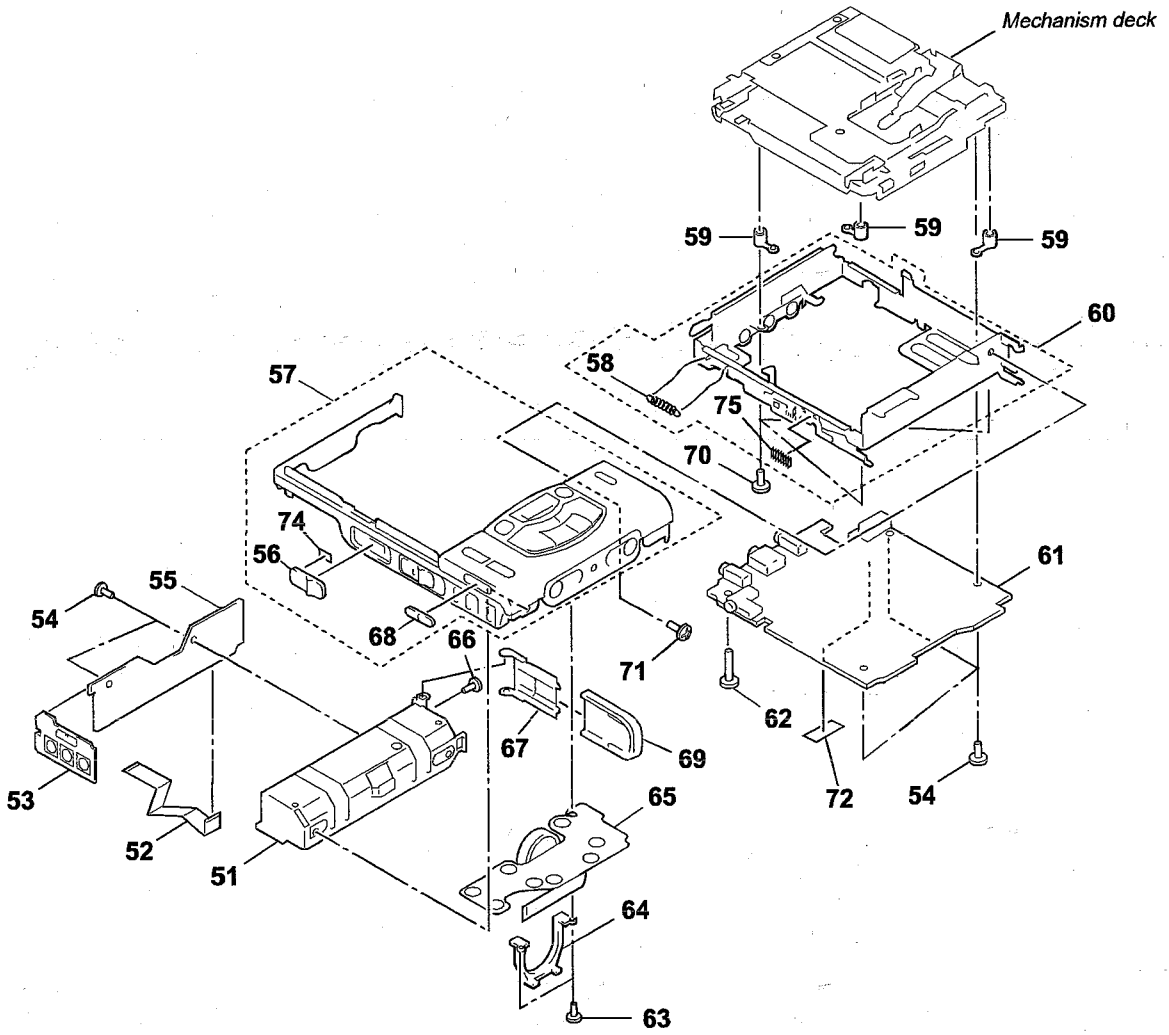
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. UPPER PANEL, BOTTOM PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-349-825-52	SCREW, PRECISION	
2	4-986-190-01	HOLDER (LCD)	
3	1-801-522-21	LCD MODULE	
4	4-995-429-01	KNOB (SYNC) ··· (SILVER)	
4	4-995-429-11	KNOB (SYNC)) ··· (BLUE)	(AEP,FR,UK,HK,JEW)
5	4-986-189-11	BUTTON (DISP) ··· (SILVER)	
5	4-986-189-21	BUTTON (DISP) ··· (BLUE)	(AEP,FR,UK,HK,JEW)
6	X-4950-040-1	PANEL (S) ASSY, UPPER ··· (SILVER)	
6	X-4950-041-1	PANEL (B) ASSY, UPPER ··· (BLUE)	(AEP,FR,UK,HK,JEW)
7	4-963-883-41	SCREW (M1.4), PRECISION PAN	
8	3-908-670-41	KNOB (DBB) ··· (SILVER)	
8	3-908-670-51	KNOB (DBB) ··· (BLUE)	(AEP,FR,UK,HK,JEW)
9	4-963-883-61	SCREW (M1.4), PRECISION PAN	
10	X-4949-118-1	PANEL (S) ASSY, BOTTOM ··· (SILVER)	
10	X-4949-123-1	PANEL (B) ASSY, BOTTOM ··· (BLUE)	(AEP,FR,UK,HK,JEW)
11	3-938-805-41	KNOB (DOLBY) ··· (SILVER)	
11	3-938-805-51	KNOB (DOLBY) ··· (BLUE)	(AEP,FR,UK,HK,JEW)
* 12	4-988-279-01	CUSHION (LCD) (AEP,FR,UK,HK,JEW)	

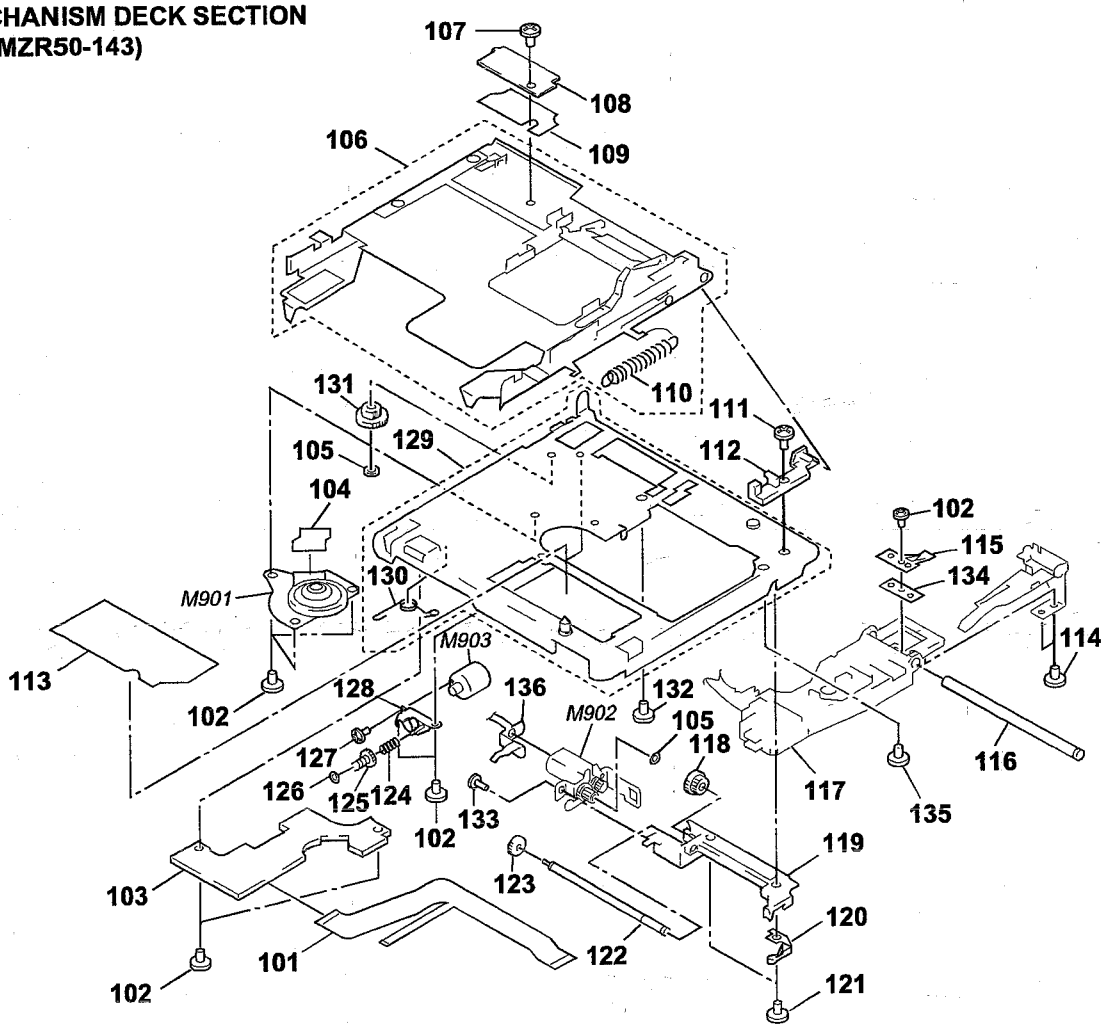
7-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
51	X-4949-116-1	CASE ASSY, BATTERY	
52	1-782-709-11	WIRE (FLAT TYPE) (22 CORE)	
53	A-3293-759-A	SWITCH BOARD, COMPLETE	
54	3-335-797-91	SCREW (M1.4), TOOTHED LOCK	
55	A-3293-758-A	POWER BOARD, COMPLETE	
56	4-964-015-31	KNOB (OPEN)	
57	X-4949-660-1	BELT (S) ASSY ··· (SILVER)	
57	X-4949-661-1	BELT (B) ASSY ··· (BLUE)(AEP,FR,UK,HK,JEW)	
58	4-995-402-01	SPRING (LOCK), TENSION	
59	4-995-435-01	DAMPER (R50)	
60	X-4949-114-1	CHASSIS (MAIN) ASSY	
61	A-3293-760-A	MAIN BOARD, COMPLETE (EXCEPT FR)	
61	A-3293-884-A	MAIN BOARD, COMPLETE (FR)	
62	4-995-436-01	SCREW (HP), STEP	
63	4-984-017-21	SCREW (1.7), TAPPING	

Ref. No.	Part No.	Description	Remark
64	4-995-434-01	HOLDER (DIAL)	
65	1-475-378-11	SWITCH UNIT (WITH JOG DIAL)	
66	4-963-883-41	SCREW (M1.4), PRECISION PAN	
67	4-995-432-01	HINGE, BATTERY	
68	4-972-529-11	KNOB (HOLD) ··· (SILVER)	
68	4-972-529-21	KNOB (HOLD) ··· (BLUE) (AEP,FR,UK,HK,JEW)	
69	4-995-431-01	LID, BATTERY CASE ··· (SILVER)	
69	4-995-431-11	LID, BATTERY CASE ··· (BLUE) (AEP,FR,UK,HK,JEW)	
70	4-995-437-01	SCREW (DAMPER)	
71	3-349-825-52	SCREW, PRECISION	
72	4-017-441-01	CUSHION (B) (AEP,UK,HK,JEW)	
74	4-998-368-01	SHEET (OPEN) (AEP,UK,HK,JEW)	
75	4-997-493-01	SPRING (LOCK),COMPRESSION	

7-3. MECHANISM DECK SECTION (MT-MZR50-143)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	1-667-210-11	MD FLEXIBLE BOARD	
102	4-963-883-01	SCREW (M1.4), PRECISION PAN	
103	A-3293-756-A	CLV BOARD, COMPLETE	
104	1-667-690-11	CLV FLEXIBLE BOARD	
105	3-338-645-31	WASHER (0.8-2.5)	
106	X-4949-129-1	HOLDER ASSY	
107	3-349-825-41	SCREW	
108	A-3293-755-A	REC BOARD, COMPLETE	
109	4-995-575-01	SHEET, INSULATING	
110	4-995-573-01	SPRING, TENSION	
111	3-704-246-13	SCREW (P1.4X2.0)	
* 112	4-995-568-01	GUIDE, HOLDER	
113	4-995-572-01	SHEET, BLIND	
114	4-955-841-01	SCREW	
115	4-995-570-01	SPRING, RACK	
116	4-995-567-01	SHAFT, MAIN	
⚠117	X-4949-256-1	OPTICAL PICK-UP ASSY (KMS-280A)	
118	4-995-578-01	GEAR (SC)	
119	X-4949-131-2	BRACKET (S) ASSY	
120	4-995-571-01	SPRING, THRUST	

Ref. No.	Part No.	Description	Remark
121	4-963-883-41	SCREW (M1.4), PRECISION PAN	
122	4-995-580-01	SCREW, LEAD	
123	4-995-586-01	GEAR (SD)	
124	4-972-546-01	SPRING (WORM GEAR),COMPRESSION	
125	4-963-901-01	GEAR, WORM	
126	3-315-384-11	WASHER, STOPPER	
127	4-964-564-01	SCREW (M1.2X1.6)	
128	X-4949-127-1	CHASSIS ASSY, GEAR	
129	X-4949-126-1	CHASSIS ASSY	
130	4-995-585-01	SPRING (LIMITTER), TORSION	
131	4-963-898-11	GEAR (WORM WHEEL)	
132	3-704-197-31	SCREW (M1.4X3.0), LOCKING	
133	3-015-033-01	SCREW (DIA. 1.4X4), PRECISION	
134	4-997-228-11	SPACER (RACK SPRING)	
135	4-997-172-01	SCREW (M1.4X3)	
136	1-667-211-11	MOTOR FLEXIBLE BOARD	
M901	1-763-011-11	MOTOR (SPINDLE)	
M902	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)	
M903	A-3320-037-A	STEPPER BLOCK ASSY (STTEPPING)	

CLV MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- *Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.*
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- *Abbreviation*
  AUS : Australian
  HK : Hong Kong
  JEW : Tourist
  FR : French

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3293-756-A	CLV BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C701	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C702	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C703	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C705	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C706	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C707	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C709	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C710	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C711	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN701	1-573-927-11	CONNECTOR, FFC/FPC (ZIF) 18P			
CN702	1-573-915-11	CONNECTOR, FFC/FPC (ZIF) 6P			
		< IC >			
IC701	8-759-335-44	IC CXA8048N			
		< TRANSISTOR >			
Q703	8-729-427-83	TRANSISTOR XP6501			
		< RESISTOR >			
R701	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R702	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R703	1-216-815-11	METAL CHIP	330	5%	1/16W
R704	1-217-671-11	METAL CHIP	1	5%	1/10W
R705	1-217-671-11	METAL CHIP	1	5%	1/10W
R706	1-216-833-11	METAL CHIP	10K	5%	1/16W
R711	1-216-864-11	METAL CHIP	0	5%	1/16W
		< SWITCH >			
S701	1-762-805-41	SWITCH, PUSH (1 KEY) (MEDIA)			
S702	1-762-835-11	SWITCH, PUSH (1 KEY) (PROTECT)			
S703	1-762-805-41	SWITCH, PUSH (1 KEY) (REFLECT)			
S704	1-771-092-21	SWITCH, PUSH (1 KEY) (INITIAL)			
S705	1-572-467-61	SWITCH, PUSH (1 KEY) (INLIMIT)			

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Ref. No.	Part No.	Description			Remark
	A-3293-760-A	MAIN BOARD, COMPLETE (EXCEPT FR)			
	A-3293-884-A	MAIN BOARD, COMPLETE (FR)			
		**********			
		< CAPACITOR >			
C101	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C102	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C103	1-135-337-11	TANTAL. CHIP	1uF	20%	6.3V
C104	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C105	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C106	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C107	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C108	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C109	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C110	1-135-337-11	TANTAL. CHIP	1uF	20%	6.3V
C117	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C118	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C120	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C121	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C122	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C123	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C124	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C125	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C131	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C140	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C161	1-162-961-11	CERAMIC CHIP	330PF	10%	50V (FR)
C161	1-162-963-11	CERAMIC CHIP	680PF	10%	50V (EXCEPT FR)
C168	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C201	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C202	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C203	1-135-337-11	TANTAL. CHIP	1uF	20%	6.3V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C206	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C207	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C208	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C209	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C210	1-135-337-11	TANTAL. CHIP	1uF	20%	6.3V
C217	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C218	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C220	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C221	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C222	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C223	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C224	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C225	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C231	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C240	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C261	1-162-961-11	CERAMIC CHIP	330PF	10%	50V (FR)
C261	1-162-963-11	CERAMIC CHIP	680PF	10%	50V (EXCEPT FR)
C268	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C292	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C293	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C294	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C295	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C296	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C303	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C305	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C306	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C307	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C308	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C310	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C311	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C314	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C315	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C318	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C319	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C320	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C321	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C322	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C327	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C338	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C345	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C346	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C359	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C365	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C366	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C368	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C369	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C392	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C394	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C399	1-107-816-11	TANTAL. CHIP	0.68uF	20%	10V
C501	1-115-169-11	TANTALUM	10uF	20%	6.3V
C504	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C505	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C506	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C507	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C508	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C509	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C510	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C511	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C512	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C515	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C518	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C519	1-109-982-11	CERAMIC CHIP	1uF	10%	10V

Ref. No.	Part No.	Description			Remark
C521	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C522	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C524	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C525	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C530	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C531	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C532	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C533	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C534	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C536	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C537	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C538	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C541	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C542	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C544	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C545	1-104-852-11	TANTAL. CHIP	22uF	20%	10V
C547	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C548	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C549	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C550	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C551	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C552	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C553	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C554	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C555	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C559	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C560	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C561	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C562	1-104-852-11	TANTAL. CHIP	22uF	20%	10V
C563	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C564	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C565	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C566	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C567	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C569	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C570	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C571	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C574	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C714	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C716	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C811	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C812	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C813	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C814	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C815	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C816	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C817	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C818	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C819	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C820	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C821	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C822	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C824	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C825	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C826	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C827	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C828	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

MAIN

Ref. No.	Part No.	Description			Remark
C829	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C830	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C831	1-104-852-11	TANTAL. CHIP	22uF	20%	10V
C833	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C834	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C835	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C836	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C839	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C851	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C861	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C862	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C899	1-251-641-11	ELEMENT, STORAGE			
C901	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C904	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C908	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C910	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C913	1-135-213-21	TANTAL. CHIP	3.3uF	20%	25V
C914	1-104-852-11	TANTAL. CHIP	22uF	20%	10V
C990	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN501	1-573-931-11	CONNECTOR, FFC/FPC (ZIF) 22P			
CN502	1-573-362-11	CONNECTOR, FFC/FPC 22P			
* CN801	1-778-170-11	CONNECTOR, FFC/FPC (ZIF) 22P			
* CN802	1-778-157-11	CONNECTOR, FFC/FPC (ZIF) 9P			
CN803	1-573-921-11	CONNECTOR, FFC/FPC (ZIF) 13P			
		< DIODE >			
D301	8-719-158-15	DIODE	RD5.6S-B		
D302	8-719-066-17	DIODE	FTZ6.8E-T148		
D303	8-719-066-17	DIODE	FTZ6.8E-T148		
D308	8-719-045-67	DIODE	RB731U-T108		
D501	8-719-421-27	DIODE	MA728		
D502	8-719-421-27	DIODE	MA728		
D804	8-719-045-67	DIODE	RB731U-T108		
D805	8-719-421-27	DIODE	MA728		
D806	8-719-421-27	DIODE	MA728		
D807	8-719-421-27	DIODE	MA728		
D808	8-719-047-73	DIODE	HRU0302A-TR		
D809	8-719-421-27	DIODE	MA728		
D903	8-719-158-15	DIODE	RD5.6S-B		
D905	8-719-066-16	DIODE	RB491D-T146		
		< FERRITE BEAD >			
FB311	1-500-444-11	INDUCTOR	0UH		
FB314	1-500-444-11	INDUCTOR	0UH		
		< IC >			
IC301	8-759-482-09	IC	RN5RZ25BA-TL		
IC302	8-759-252-90	IC	TLV2362IPW-ELM1500		
IC303	8-759-439-74	IC	AK4515-VQ		
IC304	8-759-252-90	IC	TLV2362IPW-ELM1500		
IC305	8-759-481-66	IC	DS1801E-014TE2		
IC306	8-759-487-19	IC	PST9322UL		
IC501	8-752-080-95	IC	CXA2523AR-T4		
IC503	8-752-384-47	IC	CXD2652AR		
IC505	8-759-460-34	IC	MPC17A36VMEL		
IC506	8-759-329-43	IC	MPC18A20VM		

Ref. No.	Part No.	Description		Remark
IC509	8-759-487-11	IC	MB81V16405B-60PFTN-2.8	
IC510	8-759-487-20	IC	PST9330UL	
IC702	8-759-482-07	IC	MPC17A28SVMEL	
IC801	8-752-894-67	IC	CXP81960M-652R	
IC802	8-759-343-90	IC	RS5RJ29261	
IC803	8-759-332-25	IC	XC31PNS01AMR	
IC804	8-759-343-88	IC	DS1302Z	
IC805	8-759-497-20	IC	LA4800V-S-TLM	
IC807	8-759-457-68	IC	AK93C45AV-L	
IC909	8-759-482-08	IC	XC62EP4201MR	
		< JACK >		
J301	1-779-881-21	JACK (MIC PLUG IN POWER)		
J302	1-778-179-11	JACK (2/REMOTE)		
J303	1-779-881-11	JACK (LINE OUT)		
J304	8-749-014-07	IC GP1F565R (LINE IN OPTICAL)		
J901 (DC IN 6V)	1-779-880-11	JACK,DC (POLARITY UNIFIED TYPE)		
		< COIL >		
L303	1-414-398-11	INDUCTOR	10uH	
L304	1-414-398-11	INDUCTOR	10uH	
L501	1-414-398-11	INDUCTOR	10uH	
L502	1-414-398-11	INDUCTOR	10uH	
L504	1-414-410-21	INDUCTOR	10uH	
L505	1-412-034-11	INDUCTOR CHIP	330uH	
L506	1-414-402-11	INDUCTOR	47uH	
L507	1-414-402-11	INDUCTOR	47uH	
L508	1-414-402-11	INDUCTOR	47uH	
L509	1-414-402-11	INDUCTOR	47uH	
L510	1-414-410-21	INDUCTOR	10uH	
L511	1-414-402-11	INDUCTOR	47uH	
L512	1-416-436-11	INDUCTOR	68uH	
L513	1-414-398-11	INDUCTOR	10uH	
L514	1-412-034-11	INDUCTOR CHIP	330uH	
L801	1-414-402-11	INDUCTOR	47uH	
		< LINE FILTER >		
LF901	1-416-405-21	FILTER, CHIP EMI (COMMON MODE)		
		< TRANSISTOR >		
Q101	8-729-013-37	TRANSISTOR	2SC4213-AB-TE85L	
Q102	8-729-013-37	TRANSISTOR	2SC4213-AB-TE85L	
Q201	8-729-013-37	TRANSISTOR	2SC4213-AB-TE85L	
Q202	8-729-013-37	TRANSISTOR	2SC4213-AB-TE85L	
Q301	8-729-028-91	TRANSISTOR	DTA144EUA-T106	
Q302	8-729-023-89	TRANSISTOR	2SJ305(TE85L)	
Q309	8-729-930-00	TRANSISTOR	UMD2	
Q311	8-729-930-00	TRANSISTOR	UMD2	
Q312	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR	
Q313	8-729-929-80	TRANSISTOR	UMB2	
Q314	8-729-929-80	TRANSISTOR	UMB2	
Q502	8-729-422-39	TRANSISTOR	XN4404	
Q503	8-729-930-13	TRANSISTOR	UMH2	
Q504	8-729-019-25	TRANSISTOR	2SK1467-TD	
Q505	8-729-930-00	TRANSISTOR	UMD2	
Q801	8-729-930-00	TRANSISTOR	UMD2	
Q806	8-729-031-34	TRANSISTOR	2SK2034	

Ref. No.	Part No.	Description			Remark
Q810	8-729-905-35	TRANSISTOR 2SC4081-R			
Q811	8-729-927-62	TRANSISTOR UMX1			
Q901	8-729-042-81	TRANSISTOR FZT788BTC			
Q902	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR			
Q903	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q904	8-729-042-81	TRANSISTOR FZT788BTC			
Q910	8-729-905-35	TRANSISTOR 2SC4081-R			
		< RESISTOR >			
R101	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R103	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R105	1-216-837-11	METAL CHIP	22K	5%	1/16W
R107	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R108	1-218-843-11	RES,CHIP	680	0.50%	1/16W
R111	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R112	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R119	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R121	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R122	1-218-875-11	RES,CHIP	15K	0.50%	1/16W
R123	1-218-855-11	RES,CHIP	2.2K	0.50%	1/16W
R124	1-216-835-11	METAL CHIP	15K	5%	1/16W
R134	1-216-821-11	METAL CHIP	1K	5%	1/16W
R136	1-218-879-11	RES,CHIP	22K	0.50%	1/16W (FR)
R136	1-218-871-11	RES,CHIP	10K	0.50%	1/16W (EXCEPT FR)
R137	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R141	1-216-833-11	METAL CHIP	10K	5%	1/16W
R144	1-500-444-11	INDUCTOR	0uH		
R159	1-500-444-11	INDUCTOR	0uH		
R160	1-216-857-11	METAL CHIP	1M	5%	1/16W
R201	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R203	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R205	1-216-837-11	METAL CHIP	22K	5%	1/16W
R207	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R208	1-218-843-11	RES,CHIP	680	0.50%	1/16W
R211	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R212	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R219	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R221	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R222	1-218-875-11	RES,CHIP	15K	0.50%	1/16W
R223	1-218-855-11	RES,CHIP	2.2K	0.50%	1/16W
R224	1-216-835-11	METAL CHIP	15K	5%	1/16W
R234	1-216-821-11	METAL CHIP	1K	5%	1/16W
R236	1-218-879-11	RES,CHIP	22K	0.50%	1/16W (FR)
R236	1-218-871-11	RES,CHIP	10K	0.50%	1/16W (EXCEPT FR)
R237	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R241	1-216-833-11	METAL CHIP	10K	5%	1/16W
R244	1-500-444-11	INDUCTOR	0uH		
R259	1-500-444-11	INDUCTOR	0uH		
R260	1-216-857-11	METAL CHIP	1M	5%	1/16W
R302	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R306	1-216-797-11	METAL CHIP	10	5%	1/16W
R307	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R309	1-216-809-11	METAL CHIP	100	5%	1/16W
R310	1-216-837-11	METAL CHIP	22K	5%	1/16W
R352	1-500-444-11	INDUCTOR	0uH		
R355	1-216-847-11	METAL CHIP	150K	5%	1/16W
R359	1-500-444-11	INDUCTOR	0uH		
R361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R364	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R365	1-216-809-11	METAL CHIP	100	5%	1/16W
R374	1-216-845-11	METAL CHIP	100K	5%	1/16W
R380	1-216-809-11	METAL CHIP	100	5%	1/16W
R381	1-216-809-11	METAL CHIP	100	5%	1/16W
R501	1-216-835-11	METAL CHIP	15K	5%	1/16W
R502	1-216-835-11	METAL CHIP	15K	5%	1/16W
R503	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R504	1-216-859-11	RES,CHIP	1.5M	5%	1/16W
R505	1-218-446-11	METAL CHIP	1	5%	1/16W
R506	1-216-811-11	METAL CHIP	150	5%	1/16W
R507	1-216-833-11	METAL CHIP	10K	5%	1/16W
R508	1-216-817-11	METAL CHIP	470	5%	1/16W
R509	1-216-853-11	METAL CHIP	470K	5%	1/16W
R510	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R511	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R512	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R513	1-216-843-11	METAL CHIP	68K	5%	1/16W
R514	1-216-864-11	METAL CHIP	0	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R516	1-216-821-11	METAL CHIP	1K	5%	1/16W
R517	1-216-803-11	METAL CHIP	33	5%	1/16W
R520	1-216-841-11	METAL CHIP	47K	5%	1/16W
R521	1-500-444-11	INDUCTOR	0uH		
R525	1-216-845-11	METAL CHIP	100K	5%	1/16W
R526	1-216-853-11	METAL CHIP	470K	5%	1/16W
R527	1-216-833-11	METAL CHIP	10K	5%	1/16W
R528	1-216-821-11	METAL CHIP	1K	5%	1/16W
R529	1-216-821-11	METAL CHIP	1K	5%	1/16W
R530	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R531	1-216-845-11	METAL CHIP	100K	5%	1/16W
R536	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R537	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R538	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R539	1-216-833-11	METAL CHIP	10K	5%	1/16W
R540	1-216-857-11	METAL CHIP	1M	5%	1/16W
R541	1-216-843-11	METAL CHIP	68K	5%	1/16W
R542	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R543	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R545	1-216-845-11	METAL CHIP	100K	5%	1/16W
R546	1-216-841-11	METAL CHIP	47K	5%	1/16W
R549	1-216-845-11	METAL CHIP	100K	5%	1/16W
R554	1-216-821-11	METAL CHIP	1K	5%	1/16W
R555	1-216-817-11	METAL CHIP	470	5%	1/16W
R559	1-216-811-11	METAL CHIP	150	5%	1/16W
R562	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R563	1-216-833-11	METAL CHIP	10K	5%	1/16W
R564	1-216-843-11	METAL CHIP	68K	5%	1/16W
R565	1-216-845-11	METAL CHIP	100K	5%	1/16W
R566	1-216-841-11	METAL CHIP	47K	5%	1/16W
R576	1-216-813-11	METAL CHIP	220	5%	1/16W
R710	1-216-819-11	METAL CHIP	680	5%	1/16W

MAIN POWER

Ref. No.	Part No.	Description			Remark
R802	1-216-851-11	METAL CHIP	330K	5%	1/16W
R803	1-216-857-11	METAL CHIP	1M	5%	1/16W
R816	1-216-851-11	METAL CHIP	330K	5%	1/16W
R817	1-216-851-11	METAL CHIP	330K	5%	1/16W
R818	1-216-857-11	METAL CHIP	1M	5%	1/16W
R820	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R821	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R822	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R825	1-216-851-11	METAL CHIP	330K	5%	1/16W
R826	1-216-857-11	METAL CHIP	1M	5%	1/16W
R827	1-216-864-11	METAL CHIP	0	5%	1/16W
R828	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R829	1-218-899-11	RES,CHIP	150K	0.50%	1/16W
R830	1-216-851-11	METAL CHIP	330K	5%	1/16W
R831	1-216-857-11	METAL CHIP	1M	5%	1/16W
R833	1-216-857-11	METAL CHIP	1M	5%	1/16W
R834	1-216-857-11	METAL CHIP	1M	5%	1/16W
R836	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R837	1-216-851-11	METAL CHIP	330K	5%	1/16W
R838	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R839	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R840	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R846	1-218-875-11	RES,CHIP	15K	0.50%	1/16W
R847	1-216-845-11	METAL CHIP	100K	5%	1/16W
R848	1-216-845-11	METAL CHIP	100K	5%	1/16W
R852	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R853	1-216-809-11	METAL CHIP	100	5%	1/16W
R856	1-216-821-11	METAL CHIP	1K	5%	1/16W
R857	1-216-833-11	METAL CHIP	10K	5%	1/16W
R861	1-216-857-11	METAL CHIP	1M	5%	1/16W
R866	1-216-851-11	METAL CHIP	330K	5%	1/16W
R868	1-216-845-11	METAL CHIP	100K	5%	1/16W
R870	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R873	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R877	1-216-845-11	METAL CHIP	100K	5%	1/16W
R878	1-216-833-11	METAL CHIP	10K	5%	1/16W
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-833-11	METAL CHIP	10K	5%	1/16W
R903	1-216-853-11	METAL CHIP	470K	5%	1/16W
R904	1-216-845-11	METAL CHIP	100K	5%	1/16W
R905	1-216-809-11	METAL CHIP	100	5%	1/16W
R906	1-216-841-11	METAL CHIP	47K	5%	1/16W
R907	1-220-942-11	METAL CHIP	3.3	1%	1/4W
R908	1-220-942-11	METAL CHIP	3.3	1%	1/4W
R909	1-216-857-11	METAL CHIP	1M	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB301	1-233-971-11	RES, NETWORK (CHIP TYPE) 47K			
RB302	1-233-957-11	RES, NETWORK (CHIP TYPE) 220			
RB303	1-233-969-11	RES, NETWORK (CHIP TYPE) 22K			
RB801	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
RB802	1-233-976-11	RES, NETWORK (CHIP TYPE) 330K			
RB803	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K			
RB804	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
RB805	1-233-976-11	RES, NETWORK (CHIP TYPE) 330K			
RB806	1-233-976-11	RES, NETWORK (CHIP TYPE) 330K			
RB807	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			

Ref. No.	Part No.	Description	Remark
RB808	1-233-973-11	RES, NETWORK (CHIP TYPE) 100K	
		< SWITCH >	
S301	1-762-078-11	SWITCH, SLIDE (MIC SENS)	
S804	1-771-091-21	SWITCH, PUSH (1 KEY) (REC ➞)	
S809	1-572-921-11	SWITCH, KEY BOARD (CLOCK SET)	
S810	1-692-088-11	SWITCH, TACTILE (DIGITAL MEGA BASS)	
S811	1-762-078-11	SWITCH, SLIDE (AVLS)	
S816	1-762-078-11	SWITCH, SLIDE (SYNCHRO REC)	
S817	1-762-805-21	SWITCH, PUSH (1 KEY) (DOOR OPEN)	
S823	1-572-467-41	SWITCH, PUSH (1 KEY) (OPEN ➞)	(FR)
S823	1-572-467-61	SWITCH, PUSH (1 KEY) (OPEN ➞)	(EXCEPT FR)
		< THERMISTOR(POSITIVE) >	
THP901	1-771-075-21	THERMISTOR, POSITIVE	
		< VIBRATOR >	
X501	1-767-722-21	VIBRATOR, CRYSTAL (22.5MHz)	
X801	1-760-174-31	VIBRATOR, CERAMIC (12MHz)	
X802	1-579-886-21	VIBRATOR, CRYSTAL (32kHz)	
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	A-3293-758-A	POWER BOARD, COMPLETE **********	
		< CAPACITOR >	

C801	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C802	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C807	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C809	1-115-169-11	TANTALUM	10uF	20%	6.3V
C810	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C832	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C837	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C840	1-126-923-11	ELECT	220uF	20%	10V
C841	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C842	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C843	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C860	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V

		< CONNECTOR >
CN805	1-573-931-11	CONNECTOR, FFC/FPC (ZIF) 22P
		< DIODE >
D801	8-719-988-07	DIODE RB400D
D803	8-719-989-53	LED CL-200HR-C-TSL (REC)
D810	8-719-988-62	DIODE 1SS355
		< IC >
IC806	8-759-331-73	IC MB3800PNF
IC808	8-729-039-08	IC SI6946DQ-T1
		< COIL >
L802	1-424-675-11	INDUCTOR 33uH

Ref. No.	Part No.	Description			Remark
L804	1-414-410-21	INDUCTOR	10uH		
L805	1-414-410-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q803	8-729-807-52	TRANSISTOR	2SD1623-T		
Q804	8-729-822-62	TRANSISTOR	2SB1302-T		
Q805	8-729-905-35	TRANSISTOR	2SC4081-R		
Q888	8-729-029-14	TRANSISTOR	DTC144EUA-T106		
		< RESISTOR >			
R801	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R808	1-216-817-11	METAL CHIP	470	5%	1/16W
R809	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R810	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R811	1-216-821-11	METAL CHIP	1K	5%	1/16W
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R814	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R815	1-218-863-11	RES,CHIP	4.7K	0.50%	1/16W
R867	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R875	1-216-801-11	METAL CHIP	22	5%	1/16W
R879	1-216-809-11	METAL CHIP	100	5%	1/16W
R880	1-216-837-11	METAL CHIP	22K	5%	1/16W
R888	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
		< VARIABLE RESISTOR >			
RV801	1-223-994-21	RES, CARBON ADJ VAR 4.7K (DD 2.8V)			
		< SWITCH >			
S818	1-762-621-21	SWITCH, PUSH (1 KEY) (BATTERY DET)			

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	A-3293-755-A	REC BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C401	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C402	1-107-810-11	TANTAL. CHIP	33uF	20%	4V
C403	1-109-814-11	CAP. CHIP	220PF	5%	100V
		< DIODE >			
D401	8-719-046-86	DIODE	F1J6TP		
D402	8-719-046-86	DIODE	F1J6TP		
		< TRANSISTOR >			
Q401	8-729-024-44	TRANSISTOR	2SK2315TYTR		
Q402	8-729-024-44	TRANSISTOR	2SK2315TYTR		
Q403	8-729-024-44	TRANSISTOR	2SK2315TYTR		
Q404	8-729-024-44	TRANSISTOR	2SK2315TYTR		

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	A-3293-759-A	SWITCH BOARD, COMPLETE			
		**********			
		< RESISTOR >			
R844	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R845	1-218-871-11	RES,CHIP	10K	0.50%	1/16W

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S801	1-572-921-11	SWITCH, KEY BOARD (ERASE)	
S802	1-572-921-11	SWITCH, KEY BOARD (END SERCH)	
S803	1-572-921-11	SWITCH, KEY BOARD (T MARK)	
S805	1-762-078-11	SWITCH, SLIDE (HOLD →)	

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MISCELLANEOUS

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3	1-801-522-21	LCD MODULE
52	1-782-709-11	WIRE (FLAT TYPE) (22 CORE)
65	1-475-378-11	SWITCH UNIT (WITH JOG DIAL)
101	1-667-210-11	MD FLEXIBLE BOARD
104	1-667-690-11	CLV FLEXIBLE BOARD
136	1-667-211-11	MOTOR FLEXIBLE BOARD
M901	1-763-011-11	MOTOR (SPINDLE)
M902	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)
M903	A-3320-037-A	STEPPER BLOCK ASSY (STTEPPING)

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ACCESSORIES & PACKING MATERIALS

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⚠	1-467-510-31	ADAPTOR, AC (AC-MZ60A) (US,Canadian)
⚠	1-467-511-51	ADAPTOR, AC (AC-MZ60A) (AEP,FR)
⚠	1-467-512-31	ADAPTOR, AC (AC-MZ60A) (UK,HK)
⚠	1-467-513-21	ADAPTOR, AC (AC-MZ60) (AUS)
⚠	1-467-514-11	ADAPTOR, AC (AC-MZ60) (E,JEW)
	1-475-375-21	REMOTE CONTROL UNIT (RM-MZR50)
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (E,JEW)
	1-759-277-21	CASE, BATTERY (EBP-MZR4)
	1-779-504-11	CONNECTOR, OPTICAL (AEP,FR,UK,Canadian,HK)
	3-861-298-11	MANUAL, INSTRUCTION (ENGLISH,SPANISH, PORTUGUESE,SWEDISH,FINNISH) (AEP,E,JEW)
	3-861-298-21	MANUAL, INSTRUCTION (ENGLISH) (US,UK,HK,AUS)
	3-861-298-31	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN,DUTCH,ITALIAN) (Canadian,AEP,FR)
	3-861-298-41	MANUAL, INSTRUCTION (JAPANESE,CHINESE,KOREAN) (E,HK,JEW)
	4-972-888-01	CASE, CARRYING
	4-988-159-01	CASE, ACCESSORY (JEW)
	8-953-218-90	HEADPHONE MDR-E838SP//K SET (EXCEPT US)
	8-953-278-90	HEADPHONE MDR-A34SP SET (US)
	X-3329-657-1	ATTACHMENT ASSY

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-923-258-11

Sony Corporation
Personal A&V Products Company

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